Access DB# 107134

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: JOHN MAPLES Examiner #: 62294 Date: 10/30/03
Art Unit: 1745 Phone Number 30 8-1795 Serial Number: 09/432,334
Mail Box and Bldg/Room Location: CP1A2-8E12 Results Format Preferred (circle): PAPER DISK E-MAIL
3

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: ENERGY STORAGE + CONVERSION DEVICES USING THERMAL SPRAYED ELECTRODES

Inventors (please provide full names): RONALD GUIDOTTI; HUI YE; TONGSAN XIAO ET AL

Earliest Priority Filing Date: 11/2/1998

For Sequence Searches Only *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

EXS. ACTIVE MATERIAL = FeS_2, CoS_2, WS_2, NiS_2 or MoS_2

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Searcher: EA
Searcher Phone #:
Searcher Location:
Date Searcher Picked Up:
Date Completed: 10-30-03
Searcher Prep & Review Time: 5
Clerical Prep Time:
Online Time: 70

Type of Search

NA Sequence (#)
AA Sequence (#)
Structure (#) ✓ (3)
Bibliographic ✓ (and D)
Litigation
Fulltext
Patent Family
Other

Vendors and cost where applicable

STN $184.63
Dialog
Questel/Orbit
DrugLink
Lexis/Nexis
Sequence Systems
WWW/Internet
Other (specify)

PTO-1590 (8-01)

Access DB# 107134

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: JOAN MAPLES Examiner #: 62294 Date: 10/30/03
Art Unit: 1745 Phone Number 30 8-1995 Serial Number: 09/432,334
Mail Box and Bldg/Room Location: CP42-9E12 Results Format Preferred (circle): PAPER DISK E-MAIL
3

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: ENERGY STORAGE + CONVERSION DEVICES USING THERMAL SPRAYED ELECTRODES

Inventors (please provide full names): RONALD GUIDOTTI; HUI YE; TONGSAN XIAO ET AL

Earliest Priority Filing Date: 11/2/1998

For Sequence Searches Only *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

A electrode for an energy storage and conversion device, comprising

a substrate; and

a layer of an active material comprising a metal sulfide, metal selenide, or metal telluride, and having a thickness in the range from about 5 to about 114 microns deposited on the substrate, wherein the layer comprises greater than 95% of the active material.

EXS. ACTIVE MATERIAL = FeS_2, CoS_2, WS_2, NiS_2 or MoS_2

****

STAFF USE ONLY Type of Search Vendors and cost where applicable

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=> file reg
FILE 'REGISTRY' ENTERED AT 17:15:05 ON 30 OCT 2003
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     FILE 'REGISTRY' ENTERED AT 16:36:47 ON 30 OCT 2003
                  E IRON DISULFIDE/CN
L1                1 SEA "IRON DISULFIDE"/CN
                  E COBALT DISULFIDE/CN
L2                1 SEA "COBALT DISULFIDE"/CN
                  E TUNGSTEN DISULFIDE/CN
L3                1 SEA "TUNGSTEN DISULFIDE"/CN
                  E NICKEL DISULFIDE/CN
L4                1 SEA "NICKEL DISULFIDE"/CN
                  E MOLYBDENUM DISULFIDE/CN
L5                1 SEA "MOLYBDENUM DISULFIDE"/CN
L6             3032 SEA (M(L)S)/ELS (L) 2/ELC.SUB
L7             2034 SEA (M(L)SE)/ELS (L) 2/ELC.SUB
L8             2237 SEA (M(L)TE)/ELS (L) 2/ELC.SUB

     FILE 'HCA' ENTERED AT 16:41:36 ON 30 OCT 2003
L9             1925 SEA L1
L10             358 SEA L2
L11            1747 SEA L3
L12             345 SEA L4
L13            9913 SEA L5
L14          133738 SEA L6
L15           41505 SEA L7
L16           38851 SEA L8
L17                  QUE ELECTROD## OR ANOD## OR CATHOD##
                     E COATINGS/CV
L18            7701 SEA COATINGS/CV
                     E COATING MATERIALS/CV
L19          238921 SEA "COATING MATERIALS"/CV
                     E COATING PROCESS/CV
L20          106832 SEA "COATING PROCESS"/CV
L21          240069 SEA ENERG?(2A)(STORAG? OR STORE# OR STORING# OR CONVERSIO
                    N? OR CONVERT?) OR FUELCELL? OR FUEL?(2A)(CELL OR CELLS)
                    OR BATTERY OR BATTERIES OR (ELECTROLY? OR ELECTROCHEM?
                    OR GALVANI? OR PRIMARY OR SECONDARY OR WET OR DRY)(2A)(CE
                    LL OR CELLS) OR DRYCELL? OR WETCELL?
L22              14 SEA L9 AND L17 AND (L18 OR L19 OR L20) AND L21
L23               5 SEA L10 AND L17 AND (L18 OR L19 OR L20) AND L21
L24               4 SEA L11 AND L17 AND (L18 OR L19 OR L20) AND L21
L25               2 SEA L12 AND L17 AND (L18 OR L19 OR L20) AND L21
L26              47 SEA L14 AND L17 AND (L18 OR L19 OR L20) AND L21
L27               0 SEA L15 AND L17 AND (L18 OR L19 OR L20) AND L21
L28             518 SEA L15 AND L17 AND L21
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     FILE 'LCA' ENTERED AT 16:51:18 ON 30 OCT 2003
L29         6310 SEA FILM? OR THINFILM? OR COAT? OR TOPCOAT? OR OVERCOAT?
                 OR LAYER? OR VENEER? OR CLAD? OR SHEATH? OR CASING# OR
                 ENCAS? OR ENSHEATH? OR OVERLAY? OR OVERLAID? OR ENVELOP?

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L30          222 SEA L28 AND L29
L31        89369 SEA L17(2A)L29
L32           78 SEA L30 AND L31
L33         1116 SEA L15(3A)L29
L34          530 SEA L15(3A)L17
L35           47 SEA L32 AND (L33 OR L34)
L36            1 SEA L32 AND L33 AND L34
L37              QUE (ELECTROD## OR CATHOD## OR ANOD##)/TI
L38           22 SEA L35 AND L37
L39            6 SEA L13 AND L17 AND (L18 OR L19 OR L20) AND L21
L40            1 SEA L16 AND L17 AND (L18 OR L19 OR L20) AND L21
L41          186 SEA L16 AND L17 AND L21
L42           87 SEA L41 AND L29
L43           18 SEA L42 AND (L33 OR L34)
L44            3 SEA L43 AND L37
L45            4 SEA L40 OR L44

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L46         3725 SEA (L6 OR L7 OR L8) AND (T1 OR T2 OR T3)/PG

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L47        68240 SEA L46
L48           35 SEA L47 AND L17 AND (L18 OR L19 OR L20) AND L21
L49            0 SEA L48 AND (L33 OR L34)
L50           26 SEA L48 AND L37
L51           13 SEA L50 NOT (L22 OR L23 OR L24 OR L25 OR L36 OR L38 OR
                 L39 OR L45 OR L43)
L52           37 SEA L22 OR L23 OR L24 OR L25 OR L36 OR L39 OR L43 OR L45
L53           19 SEA L38 NOT L52
L54           13 SEA L51 NOT (L52 OR L53)
L55           27 SEA L52 AND (1907-1998/PRY OR 1907-1998/PY)
L56           18 SEA L53 AND (1907-1998/PRY OR 1907-1998/PY)
L57            8 SEA L54 AND (1907-1998/PRY OR 1907-1998/PY)


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=> d l55 1-27 cbib abs hitstr hitind

L55  ANSWER 1 OF 27  HCA  COPYRIGHT 2003 ACS on STN
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139:103813 **Energy storage** and **conversion** devices using thin film oxide and nonoxide **electrodes** prepared by thermal spray. Guidotti, Ronald A.; Ye, Hui; Xiao, Tongsan D.; Reisner, David E.; Doughty, Daniel H. (USA). U.S. Pat. Appl. Publ. US 2003138695 A1 20030724, 13 pp. (English). CODEN: USXXCO. APPLICATION: US 1999-432334 19991102. PRIORITY: US 1998-PV106681 19981102.

AB Thin **electrodes** produced by thermal spray techniques are presented, wherein the thermal spray feedstock comprises an active material and a protective barrier coating. In a particularly advantageous feature, the active material feedstock is a metal sulfide, metal selenide, or metal telluride which ordinarily decomps. at thermal spray temps. or which transforms to a material unsuitable for use as an **electrode** at thermal spray temps. The **electrodes** find particular utility in thermal **batteries**.

IT **1317-33-5**, Molybdenum sulfide mos2, uses **12013-10-4**, Cobalt sulfide cos2 **12035-51-7**, Nickel sulfide nis2 **12068-85-8**, Iron sulfide fes2 **12138-09-9**, Tungsten sulfide (WS2)
(**energy storage** and **conversion** devices using thin film oxide and nonoxide **electrodes** prepd. by thermal spray)

RN 1317-33-5 HCA
CN Molybdenum sulfide (MoS2) (8CI, 9CI) (CA INDEX NAME)

S═Mo═S

RN 12013-10-4 HCA
CN Cobalt sulfide (CoS2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

S═Co═S

RN 12035-51-7 HCA
CN Nickel sulfide (NiS2) (6CI, 8CI, 9CI) (CA INDEX NAME)

S═Ni═S

RN 12068-85-8 HCA
CN Iron sulfide (FeS2) (8CI, 9CI) (CA INDEX NAME)

S═Fe═S

RN 12138-09-9 HCA
CN Tungsten sulfide (WS2) (8CI, 9CI) (CA INDEX NAME)

S═W═S

IC ICM H01M004-58
ICS B05D005-12; B05D001-02
NCL 429221000; 429223000; 429231500; 429218100; 427126100; 427427000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** oxide film **electrode** thermal spray;
energy conversion device oxide film
electrode thermal spray
IT Ball milling
Battery electrodes
Electrodes
Energy converters
Energy storage systems
Films
(**energy storage** and **conversion**
devices using thin film oxide and nonoxide **electrodes**
prepd. by thermal spray)
IT Selenides
Sulfides, uses
Tellurides
(**energy storage** and **conversion**
devices using thin film oxide and nonoxide **electrodes**
prepd. by thermal spray)
IT **Coating process**
(plasma spraying, d.c. arc; **energy storage**
and **conversion** devices using thin film oxide and
nonoxide **electrodes** prepd. by thermal spray)
IT **Coating process**
(thermal spraying; **energy storage** and
conversion devices using thin film oxide and nonoxide
electrodes prepd. by thermal spray)
IT Primary **batteries**
(thermal; **energy storage** and
conversion devices using thin film oxide and nonoxide
electrodes prepd. by thermal spray)
IT 1309-36-0, Pyrite, processes
(**energy storage** and **conversion**
devices using thin film oxide and nonoxide **electrodes**
prepd. by thermal spray)
IT **1317-33-5**, Molybdenum sulfide mos2, uses **12013-10-4**
, Cobalt sulfide cos2 **12035-51-7**, Nickel sulfide nis2
12068-85-8, Iron sulfide fes2 **12138-09-9**, Tungsten
sulfide (WS2)
(**energy storage** and **conversion**
devices using thin film oxide and nonoxide **electrodes**
prepd. by thermal spray)
IT 7704-34-9, Sulfur, uses 7782-49-2, Selenium, uses 13494-80-9,
Tellurium, uses
(**energy storage** and **conversion**
devices using thin film oxide and nonoxide **electrodes**
prepd. by thermal spray)

L55 ANSWER 2 OF 27 HCA COPYRIGHT 2003 ACS on STN
134:240187 Mixed ionic electronic conductor coatings for redox **electrodes**. Visco, Steven J.; Chu, May-Ying (PolypPlus Battery Company, Inc., USA). U.S. US 6210832 B1 20010403, 9 pp. (English). CODEN: USXXAM. APPLICATION: US 1998-145401 19980901.

AB Disclosed is a redox **electrode** for a **battery** cell that has a coating to mitigate plugging by pptd. discharge products. The coating comprises a mixed ionic electronic conductor (MIEC) which is applied to the surface of a redox **electrode**. The presence of the MIEC coating allows for rapid removal of discharge product ppts. from redox **electrodes** since it is capable of conducting both electrons and ions. As a result, the chem. action necessary to remove such ppts. may take place on both the electrolyte side of the ppt. and at the ppt./**electrode** interface. MIEC coatings in accordance with the present invention may be composed of any suitable material having ionic cond. for a metal ion in a neg. **electrode** with which the redox **electrode** is to be paired in a **battery** cell, and reversible redox capacity. Examples include TiS2, FeS2, and cobalt oxides.

IT **12068-85-8**, Iron disulfide
(mixed ionic electronic conductor coatings for redox **electrodes**)

RN 12068-85-8 HCA

CN Iron sulfide (FeS2) (8CI, 9CI) (CA INDEX NAME)

S═Fe═S

IC ICM H01M004-02

NCL 429218100

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** redox **electrode** mixed ionic electronic conductor coating

IT **Battery cathodes**
Coating materials
Secondary **batteries**
(mixed ionic electronic conductor coatings for redox **electrodes**)

IT Alkali metal sulfides
Polysulfides
Sulfides, uses
(mixed ionic electronic conductor coatings for redox **electrodes**)

IT Alkali metal compounds
Alkaline earth compounds
(polysulfides; mixed ionic electronic conductor coatings for redox **electrodes**)

IT 7704-34-9, Sulfur, uses 74432-42-1, Lithium polysulfide
(mixed ionic electronic conductor coatings for redox **electrodes**)

IT 7440-44-0, Carbon, uses 11104-61-3, Cobalt oxide 12039-13-3,

Titanium disulfide **12068-85-8**, Iron disulfide
(mixed ionic electronic conductor coatings for redox **electrodes**)

L55 ANSWER 3 OF 27 HCA COPYRIGHT 2003 ACS on STN
134:210599 Long cycle-life alkali metal **battery** with **cathode** coated with a very thin protective film. Peled, Emanuel; Golodnitsky, Diana; Strauss, Ela (Ramot University Authority for Applied Research and Industrial Development L, Israel). U.S. US 6203947 B1 20010320, 16 pp. (English). CODEN: USXXAM. APPLICATION: US 1999-280646 19990329. PRIORITY: IL 1998-124007 19980408.

AB The present invention provides a **cathode** for use in a **secondary electrochem. cell**, such **cathode** being coated with a very thin, protective film, permeable to ions. The protective film of the **cathode** usually has a thickness of up to about 0.1 .mu.m and it provides protection against high voltage charging and overdischarging. The present invention further provides a **secondary electrochem. cell** comprising such a **cathode**.

IT **12068-85-8**, Iron sulfide fes2
(long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

RN 12068-85-8 HCA

CN Iron sulfide (FeS2) (8CI, 9CI) (CA INDEX NAME)

S═Fe═S

IC ICM H01M004-58

NCL 429231950

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **battery cathode** protective film coated

IT Alloys, uses
(alkali metal; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT Alkali metals, uses
(alloys; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT Fluoropolymers, uses
Polycarbonates, uses
Polyoxyalkylenes, uses
(binder; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT Polyoxyalkylenes, uses
(lithium complex; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT **Battery cathodes**
Coating materials
Polymer electrolytes

(long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT Alkali metals, uses
(long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT 9003-17-2, Polybutadiene 9003-53-6, Polystyrene 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25322-68-3, Peo
(binder; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 12597-68-1, Stainless steel, uses
(current collector; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT 7439-89-6, Iron, uses 7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses 7440-42-8, Boron, uses 7440-48-4, Cobalt, uses 7440-70-2, Calcium, uses
(dopant; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT 1309-48-4, Magnesia, uses 1314-23-4, Zirconia, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 13463-67-7, Titania, uses
(filler; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1309-36-0, Pyrite, uses 1314-62-1, Vanadium pentoxide, uses 7439-93-2, Lithium, uses 7550-35-8, Lithium bromide 7570-02-7, DiVinyl carbonate 10377-51-2, Lithium iodide 10411-26-4, Butyl carbonate 12031-65-1, Lithium nickel oxide linio2 12039-13-3, Titanium disulfide 12057-17-9, Lithium manganese oxide limn2o4 **12068-85-8**, Iron sulfide fes2 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24991-55-7, Polyethylene glycol dimethyl ether 25322-68-3D, Peo, lithium complex 26098-78-2, Ethylene oxide-methylmethacrylate copolymer 90076-65-6 329038-54-2, Vanadium oxide (V8O13)
(long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT 7439-93-2D, Lithium, polyethylene oxide complex, uses
(long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT 33454-82-9, Lithium triflate
(stainless steel coated with; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
(stainless steel coated with; long cycle-life alkali metal **battery** with **cathode** coated with very thin protective film)

L55 ANSWER 4 OF 27 HCA COPYRIGHT 2003 ACS on STN
132:38125 Thermal sprayed **electrodes** for **energy**

storage or **conversion** devices. Ye, Hui; Strock, Christopher; Xiao, Tongsan; Strutt, Peter R.; Reisner, David E. (Us Nanocorp, Inc., USA). PCT Int. Appl. WO 9964641 A1 19991216, 19 pp. DESIGNATED STATES: W: CN, JP, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US12899 19990609. PRIORITY: US 1998-88777 19980610.

AB Film **electrodes** are manufd. by coating of an active material feedstock powder (e.g., FeS2) with an additive material (e.g., S) suitable for preventing thermal decompn. of the feedstock powder during thermal spraying. The coated feedstock is sprayed onto a substrate using a plasma gun, forming a coating on the substrate, thereby providing an **electrode.**

IT **1317-33-5**, Molybdenum disulfide, uses **12013-10-4**, Cobalt disulfide **12068-85-8**, Iron disulfide **12138-09-9**, Tungsten sulfide
(thermal sprayed film **electrodes** for **energy storage** or **conversion** devices)

RN 1317-33-5 HCA
CN Molybdenum sulfide (MoS2) (8CI, 9CI) (CA INDEX NAME)

S═Mo═S

RN 12013-10-4 HCA
CN Cobalt sulfide (CoS2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

S═Co═S

RN 12068-85-8 HCA
CN Iron sulfide (FeS2) (8CI, 9CI) (CA INDEX NAME)

S═Fe═S

RN 12138-09-9 HCA
CN Tungsten sulfide (WS2) (8CI, 9CI) (CA INDEX NAME)

S═W═S

IC ICM C23C004-04
ICS C23C004-12; H01M004-04
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **electrode** manuf thermal spraying
IT **Electrodes**
(porous; thermal sprayed film **electrodes** for **energy storage** or **conversion** devices)
IT Film **electrodes**
(thermal sprayed film **electrodes** for **energy storage** or **conversion** devices)

IT Carbonaceous materials (technological products)
Metals, uses
Oxides (inorganic), uses
Sulfides, uses
(thermal sprayed film **electrodes** for **energy storage** or **conversion** devices)
IT **Coating process**
(thermal spraying; thermal sprayed film **electrodes** for **energy storage** or **conversion** devices)
IT 7704-34-9, Sulfur, uses 9005-25-8, Starch, uses
(additive; thermal sprayed film **electrodes** for **energy storage** or **conversion** devices)
IT 7429-90-5, Aluminum, uses 7440-32-6, Titanium, uses
(substrate; thermal sprayed film **electrodes** for **energy storage** or **conversion** devices)
IT 1309-36-0, Pyrite, uses 1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide, uses **1317-33-5**, Molybdenum disulfide, uses 1344-70-3, Copper oxide 7440-44-0, Carbon, uses 7440-44-0D, Carbon, fluorinated, uses 11104-61-3, Cobalt oxide 11105-02-5, Silver vanadium oxide 11115-78-9, Copper sulfide 11118-57-3, Chromium oxide 11126-12-8, Iron sulfide **12013-10-4**, Cobalt disulfide 12039-13-3, Titanium disulfide 12054-48-7, Nickel hydroxide **12068-85-8**, Iron disulfide **12138-09-9**, Tungsten sulfide 181183-66-4, Copper silver vanadium oxide
(thermal sprayed film **electrodes** for **energy storage** or **conversion** devices)

L55 ANSWER 5 OF 27 HCA COPYRIGHT 2003 ACS on STN
123:98745 Process for **coating** with single source precursors.
Winter, Charles H.; Lewkebandara, T. Suren (Wayne State University, USA). U.S. US 5425966 A **19950620**, 7 pp. (English).
CODEN: USXXAM. APPLICATION: US 1994-329841 19941027.
AB Reaction products of metal halides with org. chalcogenides and dichalcogenides provide single source precursors for metal dichalcogenide **coatings**. The single source precursors are sublimed at reduced pressure and allowed to contact a substrate maintained at an elevated temp. The resulting dichalcogenide **coatings** (for example TiS2) are smooth, and adherent, and may be used in numerous applications, for example, as **cathodes** for Li **batteries**.
IT **12067-45-7**, Titanium diselenide **12067-75-3**, Titanium ditelluride
(**film** deposition using single source precursor)
RN 12067-45-7 HCA
CN Titanium selenide (TiSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se=Ti=Se

RN 12067-75-3 HCA
CN Titanium telluride (TiTe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te═ Ti═ Te

IC ICM C23C016-00
NCL 427255100
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 52
ST Group IVB chalcogenide deposition single precursor; titanium chalcogenide **film** deposition single precursor
IT Group IVB element compounds
(halo org. chalcogenide complexes; prepn. and use as single source precursor for metal dichalcogenide **film** deposition)
IT Vapor deposition processes
(of metal dichalcogenide **films** using single source precursor)
IT Group IVB element halides
(reaction with org. chalcogen compds. in prepn. of single source precursors for metal dichalcogenide **films**)
IT 12039-13-3, Titanium disulfide **12067-45-7**, Titanium diselenide **12067-75-3**, Titanium ditelluride
(**film** deposition using single source precursor)
IT 165327-11-7P 165327-12-8P
(prepn. and use as single source precursor for metal dichalcogenide **film** deposition)
IT 16893-00-8P 16893-01-9P 16920-83-5P 57965-49-8P
(prepn. as single source precursor for metal dichalcogenide **film** deposition)
IT 7550-45-0, Titanium tetrachloride, reactions
(reaction with org. chalcogen compds. in prepn. of single source precursors for metal dichalcogenide **films**)
IT 165327-13-9
(titanium sulfide **film** deposition using single source precursor of)

L55 ANSWER 6 OF 27 HCA COPYRIGHT 2003 ACS on STN
122:85495 Secondary alkali metal **battery**. Kozmik, Ivan D.; Tovstjuk, Kornei D.; Kovalyuk, Zahar D.; Grigortchak, Ivan I.; Krigan, Elvria G.; Bahmatyuk, Bogdan P. (I. N. Frantsevich Institute for Problems in Materials Science, Ukraine). U.S. US 5368957 A **19941129**, 12 pp. Cont.-in-part of U.S. Ser. No.783,886, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1992-968183 19921029. PRIORITY: US 1991-783886 19911029.
AB The **battery** with improved capacity contains a Group IA element (G) **anode**, an electrolyte capable of ion transport of **anode** species, and a **cathode** comprising a **layered** cryst. material GxMyXz, where x .ltoreq.10, M is Bi and Sb, y = 1 and 2, X is S, Se and Te, and z = 1, 2, and 3. The **layered** cryst. material has a sufficiently low defect d. and appropriate impurity distribution, together sufficient to permit intercalation of .gtoreq.3 mol Li within van der Waals channels/mol

of said material without significant distortion of the lattice. The change in Gibbs free energy of this material is substantially independent of the intercalated Li concn.

IT **1304-82-1P**, Bismuth telluride **12068-69-8P**, Bismuth selenide
(**battery cathodes** from lithium-intercalatable)

RN 1304-82-1 HCA
CN Bismuth telluride (Bi2Te3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 12068-69-8 HCA
CN Bismuth selenide (Bi2Se3) (6CI, 8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	3	7782-49-2
Bi	2	7440-69-9

IC ICM H01M004-58
NCL 429194000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST alkali metal secondary **battery**; lithium intercalatable chalcogenide **battery cathode**
IT **Batteries**, secondary
(alkali metal)
IT **Cathodes**
(**battery**, from lithium-intercalatable antimony or bismuth chalcogenides)
IT 7439-93-2P, Lithium, uses
(**battery cathodes** from antimony or bismuth chalcogenides intercalated with)
IT **1304-82-1P**, Bismuth telluride 1345-07-9P, Bismuth sulfide **12068-69-8P**, Bismuth selenide
(**battery cathodes** from lithium-intercalatable)
IT 7440-36-0D, Antimony, chalcogenides
(**battery cathodes** from lithium-intercalatable)
IT 1304-76-3, Bismuth oxide, uses 1317-38-0, Copper oxide (CuO), uses
(**battery cathodes** from lithium-intercalatable chalcogenides contg.)

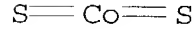
L55 ANSWER 7 OF 27 HCA COPYRIGHT 2003 ACS on STN
120:81559 Stacked cell array bipolar **battery** with thermal sprayed container and cell seal. Williams, Mark T.; Briscoe, James D.; Oweis, Salah M. (Saft America Inc., USA). U.S. US 5254415 A **19931019**, 11 pp. (English). CODEN: USXXAM. APPLICATION: US 1992-865471 19920409.

AB A Li alloy/metal sulfide **battery** comprises a stacked array of cells spray coated with a ceramic coating followed by a metallic containment structural coating (e.g., from stainless steel SUS410)

to maintain the structural integrity of the array during high-temp. use. The ceramic layer preferably comprises Li2S, CaS, SrS, BaS, Li2O, BeO, MgO, CaO, SrO, Ba2O, Li3N, Be3N2, Mg3N2, Ca3N2, Sr3N2, Si3N4, BN, AlN, and their mixts.

IT **12013-10-4**, Cobalt sulfide (CoS2) **12035-51-7**, Nickel sulfide (NiS2) **12068-85-8**, Iron sulfide (FeS2)
(**cathode**, in stacked cell array bipolar **battery** with thermal sprayed container and cell seal)

RN 12013-10-4 HCA
CN Cobalt sulfide (CoS2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 12035-51-7 HCA
CN Nickel sulfide (NiS2) (6CI, 8CI, 9CI) (CA INDEX NAME)

RN 12068-85-8 HCA
CN Iron sulfide (FeS2) (8CI, 9CI) (CA INDEX NAME)

IC ICM H01M006-46
ICS H01M002-08; H01M010-18; H01M004-36
NCL 429153000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** stacked ceramic coating; magnesia coating stacked **battery**

IT **Coating materials**
(ceramics, in stacked cell array bipolar **battery** with thermal sprayed container and cell seal)

IT Ceramic materials and wares
(coating, in stacked cell array bipolar **battery** with thermal sprayed container and cell seal)

IT **Batteries**, primary
(stacked, lithium alloy-metal sulfide, with ceramic coating, for high-temp. use)

IT 72785-69-4
(**anode**, in stacked cell array bipolar **battery** with thermal sprayed container and cell seal)

IT 1314-62-1, Vanadium oxide (V2O5), uses 1317-42-6, Cobalt sulfide CoS) **12013-10-4**, Cobalt sulfide (CoS2) 12031-65-1, Lithium nickel oxide (LiNiO2) **12035-51-7**, Nickel sulfide (NiS2) 12039-13-3, Titanium sulfide (TIS2) **12068-85-8**, Iron sulfide (FeS2) 12190-79-3, Cobalt lithium oxide (LiCoO2) 13463-67-7, Titania, uses 16812-54-7, Nickel sulfide (NiS)
(**cathode**, in stacked cell array bipolar **battery** with thermal sprayed container and cell seal)

IT 1304-54-7, Beryllium nitride (Be3N2) 1304-56-9, Beryllium oxide (BeO) 1305-78-8, Calcia, uses 1309-48-4, Magnesia, uses 1314-11-0, Strontium oxide (SrO), uses 1314-96-1, Strontium sulfide (SrS) 7439-98-7, Molybdenum, uses 10043-11-5, Boron nitride (BN), uses 12013-82-0, Calcium nitride (Ca3N2) 12033-82-8, Strontium nitride (Sr3N2) 12033-89-5, Silicon nitride, uses 12057-24-8, Lithium oxide (Li2O), uses 12057-71-5, Magnesium nitride (Mg3N2) 12136-58-2, Lithium sulfide (Li2S) 12231-50-4, Barium oxide (Ba2O) 12611-79-9, SUS410 20548-54-3, Calcium sulfide (CaS) 21109-95-5, Barium sulfide (BaS) 24304-00-5, Aluminum nitride (AlN) 26134-62-3, Lithium nitride (Li3N)
(coating, in stacked cell array bipolar **battery** with thermal sprayed container and cell seal)

L55 ANSWER 8 OF 27 HCA COPYRIGHT 2003 ACS on STN
111:60991 Photochargeable **battery**. Takada, Kazunori; Kanbara, Teruhisa; Tonomura, Tadashi; Kondo, Shigeo (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01007480 A2 **19890111** Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-162780 19870630.

AB The title **battery** has a solid electrolyte, a photoconductive **electrode coated** with a material which can electrochem. insert or exclude a mobile metal ion of the electrolyte, and a counterlectrode contg. that metal or ion. The photoconductive **electrode** can be an n- or p-type org. or inorg. semiconductor. When the mobile ion is Cu ion, the **coating** material can be Chevrel-type CuxMo6S8-y (x .ltoreq.8, y .ltoreq.0.5), the electrolyte can be RbCu4I2-zCl3+z (z 0.5-1), and the counterelectrode can be Cu or the above CuxMo6S8-y; when the mobile ion is Ag, the **coating** material can be Chevrel-type AgaMo6S8-b (a .ltoreq.8, b .ltoreq.0.5), the electrolyte can be RbAg4I2-zCl3+z, and the counterelectrode can be Ag of AgaMo6S6-b. Thus, a **battery** using a Cu2Mo6S8-**coated** ITO **electrode**, a RbCu4I1.5Cl3.5 electrolyte, and a Cu2S counterelectrode had a higher capacity than a **battery** using a Au-**coated** ITO **electrode**.

IT **1306-25-8**, Cadmium telluride (CdTe), uses and miscellaneous **12058-18-3**, Molybdenum selenide (MoSe2) **12067-46-8**, Tungsten diselenide
(**electrodes** from Chevrel-type compd.-**coated**, photoconductive n-type, for photochargeable **batteries**)

RN 1306-25-8 HCA
CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

RN 12058-18-3 HCA
CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se=Mo=Se

RN 12067-46-8 HCA
CN Tungsten selenide (WSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se=W=Se

IC ICM H01M014-00
ICS H01L031-04
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** photochargeable photoconductive **electrode** **coating**; ITO **electrode** copper molybdenum sulfide
IT **Electrodes**
(**battery**, semiconductor, Chevrel-type compd.-**coated**)
IT 1303-00-0, Gallium arsenide (GaAs), uses and miscellaneous 1306-23-6, Cadmium sulfide (CdS), uses and miscellaneous 1306-24-7, Cadmium selenide (CdSe), uses and miscellaneous **1306-25-8**, Cadmium telluride (CdTe), uses and miscellaneous 1317-33-5, Molybdenum disulfide, uses and miscellaneous 7440-21-3, Silicon, uses and miscellaneous 12018-95-0, Copper indium selenide (CuInSe2) **12058-18-3**, Molybdenum selenide (MoSe2) 12063-98-8, Gallium phosphide (GaP), uses and miscellaneous 12064-03-8, Gallium antimonide (GaSb) **12067-46-8**, Tungsten diselenide 22398-80-7, Indium phosphide (InP), uses and miscellaneous 37382-15-3, Aluminum gallium arsenide ((Al,Ga)As) 121857-55-4, Indium silver sulfide (InAg0-1S2) 121857-78-1, Copper indium selenide (Cu0-1InSe2) 121857-79-2, Copper indium selenide (Cu3-1InS2)
(**electrodes** from Chevrel-type compd.-**coated**, photoconductive n-type, for photochargeable **batteries**)
IT 7681-65-4, Copper iodide (CuI) 7758-89-6, Copper chloride (CuCl) 7783-90-6, Silver chloride (AgCl), uses and miscellaneous 7783-96-2, Silver iodide (AgI) 7785-23-1, Silver bromide (AgBr) 7787-70-4, Copper bromide (CuBr) 121857-74-7, Copper sulfide (Cu1-2S) 121918-00-1, Silver sulfide (Ag1-2S)
(**electrodes** from Chevrel-type compd.-**coated**, photoconductive p-type, for photochargeable **batteries**)
IT 51912-50-6, Copper molybdenum sulfide (CuMo3S4) 120922-23-8, Molybdenum silver sulfide (Mo3AgS4) 121857-76-9, Molybdenum silver sulfide (Mo6Ag0-8S7.5-8) 121857-77-0, Copper molybdenum sulfide (Cu0-8Mo6S7.5-8)
(**electrodes** from semiconductors **coated** with Chevrel-type, photoconductive, for photochargeable **batteries**)
IT 22205-45-4, Copper sulfide (Cu2S)
(**electrodes**, for photochargeable **batteries**)
IT 73379-32-5, Copper rubidium chloride iodide (Cu4RbCl3.5I1.5) 121857-75-8, Rubidium silver chloride iodide (RbAg4Cl3.5-4I1-1.5)
(electrolyte, for photochargeable **batteries**)

L55 ANSWER 9 OF 27 HCA COPYRIGHT 2003 ACS on STN
109:233267 Low temperature chemical preparation of semiconducting transition metal chalcogenide films for **energy conversion** and **storage**, lubrication and surface protection. Chatzitheodorou, G.; Fiechter, S.; Kunst, M.; Luck, J.; Tributsch, H. (Hahn-Meitner-Inst., Berlin, Fed. Rep. Ger.). Materials Research Bulletin, 23(9), 1261-71 (English) **1988**. CODEN: MRBUAC. ISSN: 0025-5408.

AB A technique is presented for the prodn. of films of transition-metal disulfides, such as MoS2, WS2, FeS2, and RuS2, by the reaction of transition metal carbonyls (e.g., Mo(Co)6, W(CO)6, Fe(CO)5, Ru3(CO)12) with a S source (e.g., S, H2S) in an org. solvent (e.g., C6H6, PhMe, xylene, mesitylene (1,3,5-trimethylbenzene)) at 80-165.degree.. The quality of the materials and films was studied. Some applications are discussed: as photoactive materials (e.g., MoS2, WS2, FeS2), as lubricating films (MoS2), as **electrodes** for Li **batteries** (MoS2, FeS2), and in corrosion protection (RuS2).

IT **12068-85-8**, Iron disulfide
(deposition of film of, by reaction of iron carbonyl and sulfur and hydrogen sulfide and thiourea)

RN 12068-85-8 HCA

CN Iron sulfide (FeS2) (8CI, 9CI) (CA INDEX NAME)

S═Fe═S

IT **1317-33-5P**, Molybdenum disulfide, preparation
(deposition of film of, by reaction of molybdenum carbonyl and sulfur)

RN 1317-33-5 HCA

CN Molybdenum sulfid NAME)

S═Mo═S

IT **12138-09-9**, Tungs
(deposition of ten carbonyl and sulfur)

RN 12138-09-9 HCA

CN Tungsten sulfide ME)

S═W═S

CC 47-10 (Apparatus

IT **Batteries**, primar
(lithium-trans tion, transition-met

IT **Coating materials**
(anticorrosive, ruthenium sulfide, prepn. of, by reaction of

ruthenium carbonyl and sulfur)
IT **12068-85-8**, Iron disulfide
(deposition of film of, by reaction of iron carbonyl and sulfur and hydrogen sulfide and thiourea)
IT **1317-33-5P**, Molybdenum disulfide, preparation
(deposition of film of, by reaction of molybdenum carbonyl and sulfur)
IT **12138-09-9**, Tungsten disulfide
(deposition of film of, by reaction of tungsten carbonyl and sulfur)

L55 ANSWER 10 OF 27 HCA COPYRIGHT 2003 ACS on STN
108:153728 **Cathodes** for photochargeable solid-state **battery**. Kanbara, Teruhisa; Tonomura, Tadashi; Kondo, Shigeo (Dodensei Muki Kagobutsu Gijutsu Kenkyu Kumiai, Japan). Jpn. Kokai Tokkyo Koho JP 63004558 A2 **19880109** Showa, 5 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-148780 19860625.
AB The photochargeable **battery** consists of a Cu-based **anode**, a Cu+-conducting electrolyte, and an n-type WX2 **cathode**. Thus, a **cathode layer** of a 2:3 mixt. of WSe2-RbCu4I1.5Cl3.5 electrolyte (I); an electrolyte **layer**; and an **anode layer** of a 4:19:5 mixt. of Cu powder, Cu1.59S, and I were pressed together to form a pellet, which was attached with a In-Sn oxide-**coated** glass plate **cathode** collector and a carbon fiber-SBR **anode** collector to form a **battery** having better charging-discharging performance at 60.degree. than a **battery** using a ZrS2-contg. **cathode**.
IT **12067-46-8 12067-76-4**
(**cathodes**, for photochargeable solid-state copper **battery**)
RN 12067-46-8 HCA
CN Tungsten selenide (WSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═W═Se

RN 12067-76-4 HCA
CN Tungsten telluride (WTe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te═W═Te

IC ICM H01M004-58
ICS H01L031-04; H01M004-02; H01M010-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST tungsten selenide photochargeable **battery cathode**
IT **Batteries**, secondary
(copper/tungsten chalcogenide, solid-state, photochargeable)
IT **Cathodes**
(**battery**, tungsten chalcogenide, photochargeable)
IT **12067-46-8 12067-76-4** 12138-09-9

(**cathodes**, for photochargeable solid-state copper **battery**)

L55 ANSWER 14 OF 27 HCA COPYRIGHT 2003 ACS on STN
108:153727 Photochargeable secondary solid-state **battery**. Kanbara, Teruhisa; Tonomura, Tadashi; Kondo, Shigeo (Dodensei Muki Kagobutsu Gijutsu Kenkyu Kumiai, Japan). Jpn. Kokai Tokkyo Koho JP 63004557 A2 **19880109** Showa, 5 (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-148779 19860625.

AB The photochargeable **battery** consists of a Cu-based **anode**, a Cu+-conducting solid electrolyte, and a **cathode** mainly consisting of n-type MoX2 (X = S, Se, or Te), and is charged by illuminating the **cathode**. Thus, a **battery** waas prepd. by pressing a **cathode layer** of a 2:3 (wt.) MoSe2-RbCu4I1.5Cl3.5 (I, electrolyte) mixt., an electrolyte **layer**; and an **anode layer** of a 4:19:5 (wt.) Cu powder-Cu1.59S-I mixt. to form a pellet; and connecting a **cathode** collector of an In-Sn oxide-**coated** glass and an **anode** collector of a carbon-SBR composite to the resp. **electrodes**. When cycled at 60.degree. by 1-h discharging at 100-.mu.A and 1-h charging by illuminating the **cathode** with a 100-W Xe lamp from a 50-cm distance, this **battery** had better performance than a **battery** using a ZrS2 **cathode**.

IT **12058-18-3 12058-20-7**
(**cathodes**, for photo-chargeable solid-state **batteries**)

RN 12058-18-3 HCA
CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se=Mo=Se

RN 12058-20-7 HCA
CN Molybdenum telluride (MoTe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te=Mo=Te

IC ICM H01M004-58
ICS H01L031-04; H01M004-02; H01M010-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST molybdenum selenide photochargeable **battery cathode**
IT **Cathodes**
(**battery**, molybdenum chalcogenide, photochargeable)
IT 7440-05-3, Palladium, uses and miscellaneous 7440-06-4, Platinum, uses and miscellaneous
(**cathodes** contg., molybdenum chalcogenide, for photochargeable solid-state **battery**)
IT 1317-33-5, uses and miscellaneous **12058-18-3 12058-20-7**

(**cathodes**, for photo-chargeable solid-state **batteries**)

L55 ANSWER 12 OF 27 HCA COPYRIGHT 2003 ACS on STN
108:153645 Solar-powered secondary **batteries**. Kanbara, Teruhisa; Tonomura, Tadashi (Dodensei Muki Kagobutsu Gijutsu Kenkyu Kumiai, Japan). Jpn. Kokai Tokkyo Koho JP 62259359 A2 **19871111** Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-102343 19860502.

AB The title **batteries** have a Cu **anode**, a Cu+-conducting solid electrolyte, and n-type ZrX2 (X = Se, Te) **cathode**. Thus, **layers** of 60 mg 2:3 (wt.) ZrSe2-RbCu4I1.5Cl3.5 (I) mixt., 50 mg I; and 50 mg 4:19:5 (wt.) mixt. of Cu, Cu1.59S, and I were pressed to form a **battery** with the **cathode** covered by a glass plate having an In-Sn oxide transparent **layer**. The **electrodes** are connected by a diode to prevent reverse current during charging. When charged by a 100-W Xe lamp from a 50-cm distance and discharged at 100 .mu.A, it showed less output-voltage decrease than a **battery** using a ZrS2 **cathode**.

IT **113671-81-1 113671-82-2**
(n-type **cathodes**, for solar-charged solid-state copper **batteries**)

RN 113671-81-1 HCA
CN Zirconium selenide (ZrSe1.8-2.1) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	1.8 - 2.1	7782-49-2
Zr	1	7440-67-7

RN 113671-82-2 HCA
CN Zirconium telluride (ZrTe1.8-2.1) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Te	1.8 - 2.1	13494-80-9
Zr	1	7440-67-7

IC ICM H01M010-46
ICS H01L031-04; H01M004-58; H01M010-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST solar charged secondary **battery**; zirconium selenide **battery cathode**
IT **Cathodes**
(**battery**, solar-charged, n-type zirconium selenide or telluride)
IT **113671-81-1 113671-82-2**
(n-type **cathodes**, for solar-charged solid-state copper **batteries**)

L55 ANSWER 13 OF 27 HCA COPYRIGHT 2003 ACS on STN
106:159511 Lithium **electrochemical cells** at low voltage: decomposition of molybdenum and tungsten dichalcogenides. Selwyn, L. S.; McKinnon, W. R.; Von Sacken, U.; Jones, C. A. (Div. Chem., Natl. Res. Counc. Canada, Ottawa, ON, K1A OR9, Can.). Solid State Ionics, 22(4), 337-44 (English) **1987**. CODEN: SSIOD3. ISSN: 0167-2738.

AB Results are given for low voltage discharges of Li **electrochem. cells** contg. **layered** dichalcogenides of Mo and W. The reversible intercalation of Li at high voltages occurs only for phases with octahedrally coordinated metal atoms, but all phases decomp. irreversibly at low voltages to a mixt. of Mo or W and Li2X, where X is S, Se, or Te. Li can be removed electrochem. from these mixts. at a voltage that correlates with the free energies of formation of Li2X.

IT **12058-18-3**, Molybdenum diselenide **12058-20-7**, Molybdenum ditelluride **12067-46-8**, Tungsten diselenide **57620-27-6**
(**cathodes**, in lithium **batteries**, intercalation in relation to)

RN 12058-18-3 HCA
CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Mo═Se

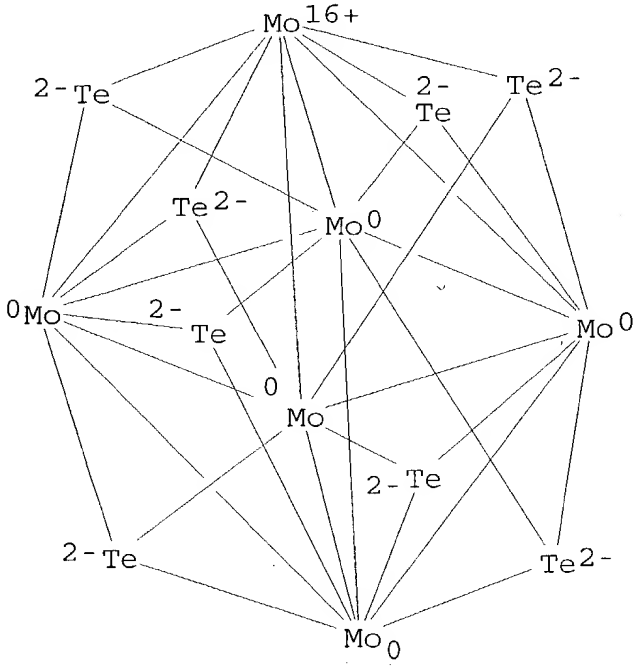
RN 12058-20-7 HCA
CN Molybdenum telluride (MoTe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te═Mo═Te

RN 12067-46-8 HCA
CN Tungsten selenide (WSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═W═Se

RN 57620-27-6 HCA
CN Molybdenum, octa-.mu.3-telluroxohexa-, octahedro (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium intercalation tungsten molybdenum chalcogenide; **cathode** tungsten molybdenum chalcogenide lithium
IT **Cathodes**
(**battery**, dichalcogenides of molybdenum or tungsten, with lithium **anodes**)
IT 7439-93-2, Lithium, uses and miscellaneous
(**anodes**, in **batteries** with dichalcogenides of molybdenum or tungsten as **cathodes**)
IT 1317-33-5, Molybdenum disulfide, uses and miscellaneous **12058-18-3**, Molybdenum diselenide **12058-20-7**, Molybdenum ditelluride **12067-46-8**, Tungsten diselenide 12138-09-9, Tungsten disulfide 57620-25-4, Molybdenum sulfide (Mo6S8) **57620-27-6**
(**cathodes**, in lithium **batteries**, intercalation in relation to)

L55 ANSWER 14 OF 27 HCA COPYRIGHT 2003 ACS on STN
104:171377 Rechargeable solid **electrolyte cells** with a copper ion conductor, Rb4Cu16I7-xCl13+x. Kanno, Ryoji; Takeda, Yasuo; Oda, Yasuhiro; Ikeda, Hiroyuki; Yamamoto, Osamu (Fac. Eng., Mie Univ., Tsu, 514, Japan). Solid State Ionics, 18-19(2), 1068-72 (English) **1986**. CODEN: SSIOD3. ISSN: 0167-2738.
AB A high performance secondary solid electrolyte **battery** with a high Cu ion conductor, Rb4Cu16I6.8Cl13.2, was developed. The cell using Cu-Chevrel phase Cu4Mo6S8 as an **anode** and a **layered** Cu intercalation compd. NbS2 as a **cathode**, had a high discharge capacity and good rechargeability. At a c.d.

of 150 .mu.A/cm2, the **cathode** capacity was 60 mA-h/g (0.3 electron/NbS2) and at 750 .mu.A/cm2 it was 48 mA-h/g (0.24 electron/NbS2). On the charge-discharge cycle test of 75 .mu.A/cm2 and 0.3% electron/NbS2 depth, the cell did not show a significant deterioration in the charge-discharge curves during .gtoreq.500 cycles.

IT **12034-77-4 12034-83-2 12039-55-3**
12058-18-3 12058-20-7 12067-45-7
12067-66-2 12067-76-4
(**cathodes**, **battery**, with copper rubidium chloride iodide electrolyte, performance of)

RN 12034-77-4 HCA
CN Niobium selenide (NbSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Nb═Se

RN 12034-83-2 HCA
CN Niobium telluride (NbTe2) (7CI, 8CI, 9CI) (CA INDEX NAME)

Te═Nb═Te

RN 12039-55-3 HCA
CN Tantalum selenide (TaSe2) (7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Ta═Se

RN 12058-18-3 HCA
CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Mo═Se

RN 12058-20-7 HCA
CN Molybdenum telluride (MoTe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te═Mo═Te

RN 12067-45-7 HCA
CN Titanium selenide (TiSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Ti═Se

RN 12067-66-2 HCA
CN Tantalum telluride (TaTe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te═Ta═Te

RN 12067-76-4 HCA
CN Tungsten telluride (WTe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te═ W═ Te

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST **battery** solid electrolyte copper conductor
IT **Batteries**, secondary
(copper molybdenum sulfide-metal chalcogenide, with copper rubidium chloride iodide electrolyte, performance of)
IT 58051-93-7
(**anodes**, **battery**, with copper rubidium chloride iodide electrolyte, performance of)
IT 1317-33-5, uses and miscellaneous **12034-77-4**
12034-83-2 12039-13-3 12039-15-5 **12039-55-3**
12058-18-3 12058-20-7 12067-45-7
12067-66-2 12067-76-4 12138-09-9 12143-72-5
12164-84-0 12166-28-8 39290-91-0 42821-47-6 42821-48-7
52226-00-3
(**cathodes**, **battery**, with copper rubidium chloride iodide electrolyte, performance of)
IT 56188-83-1D, solid solns. with copper rubidium chloride
63310-92-9D, solid solns. with copper rubidium iodide
(electrolytes, copper molybdenum sulfide-niobium sulfide **battery**, performance of)

L55 ANSWER 15 OF 27 HCA COPYRIGHT 2003 ACS on STN
102:223362 Progress in the SERI-DOE photoelectrochemical cell program. Wallace, William (Sol. Energy Res. Inst., Golden, CO, 80401, USA). Conference Record of the IEEE Photovoltaic Specialists Conference, 16th, 1066-71 (English) **1982**. CODEN: CRCNDP. ISSN: 0160-8371.
AB The concept of photoelectrochem. storage was investigated and demonstrated in studies involving 3-**electrode** in-situ and 4-**electrode** redox storage cells. For these cells system efficiencies of 1-3% were obtained to date for the net conversion of light to elec. energy. SERI also monitors the tech. progress in the Texas Instruments solar energy system program which involves conversion of light into elec. and thermal energy in a system which incorporates electrochem. storage. Research on polycryst. thin-**film** n-CdSe and n-CdSexTe1-x based photoelectrochem. cells resulted in achievement of .ltoreq.7% efficiencies for the direct conversion of light into elec. **energy** without **storage** in devices contg. a sulfide/polysulfide electrolyte. Higher efficiencies are possible with improved polycryst. thin **films** and alternate electrolytes.
IT **1306-25-8D**, solid solns. with cadmium selenide
(**electrodes**, photoelectrochem. cells based on thin-**film** cadmium selenide and, progress in)

RN 1306-25-8 HCA
CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

IT **1306-24-7**, uses and miscellaneous
(**electrodes**, photoelectrochem. cells based on thin-**film** cadmium selenide telluride and, progress in)
RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST cadmium selenide telluride photoelectrochem cell; photoelectrochem cell development; redox photoelectrochem cell development; solar **energy conversion storage**
IT **Energy**
(solar, **conversion** and storage of, progress in)
IT 1306-24-7D, solid solns. with cadmium telluride **1306-25-8D**, solid solns. with cadmium selenide
(**electrodes**, photoelectrochem. cells based on thin-**film** cadmium selenide and, progress in)
IT **1306-24-7**, uses and miscellaneous
(**electrodes**, photoelectrochem. cells based on thin-**film** cadmium selenide telluride and, progress in)

L55 ANSWER 16 OF 27 HCA COPYRIGHT 2003 ACS on STN
102:206554 Applications of electrogenerated conducting polymers in **electrochemical** photovoltaic **cells**. Noufi, Rommel (Sol. Electr. Convers. Res. Div., Sol. Energy Res. Inst., Golden, CO, 80401, USA). Conference Record of the IEEE Photovoltaic Specialists Conference, 16th, 1293-8 (English) **1982**. CODEN: CRCNDP. ISSN: 0160-8371.
AB The electrochem. generated conducting polypyrrole PP [30604-81-0] **films** protect n-type semiconductor photoelectrodes from degrdn. while permitting electron exchange between the semiconductor and the electrolyte. The performance characteristics and stability of PP-covered GaAs, Si, CdTe, CdSe, and CdS photoelectrodes are discussed.
IT **1306-24-7**, uses and miscellaneous **1306-25-8**, uses and miscellaneous
(**electrodes** from polypyrrole-**coated**, photoelectrochem., performance and stability of)
RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

RN 1306-25-8 HCA
CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72
ST polypyrrole **coating** photoelectrochem **electrode**; silicon polypyrrole photoelectrochem **electrode**; sulfide cadmium polypyrrole photoelectrochem **electrode**; selenide cadmium polypyrrole photoelectrochem **electrode**; gallium arsenide polypyrrole photoelectrochem **electrode**; cadmium telluride polypyrrole photoelectrochem **electrode**
IT **Electrodes**
(photoelectrochem., polypyrrole-**coated**, performance and stability of)
IT 30604-81-0
(**electrodes coated** with, photoelectrochem., performance and stability of)
IT 1303-00-0, uses and miscellaneous 1306-23-6, uses and miscellaneous **1306-24-7**, uses and miscellaneous **1306-25-8**, uses and miscellaneous 7440-21-3, uses and miscellaneous
(**electrodes** from polypyrrole-**coated**, photoelectrochem., performance and stability of)

L55 ANSWER 17 OF 27 HCA COPYRIGHT 2003 ACS on STN
102:206541 II-VI thin **film electrochemical** photovoltaic **cells**. Russak, Michael A.; Reichman, Joseph (Res. Dev. Cent., Grumman Aerosp. Corp., Bethpage, NY, 11714, USA). Conference Record of the IEEE Photovoltaic Specialists Conference, 16th, 1057-61 (English) **1982**. CODEN: CRCNDP. ISSN: 0160-8371.
AB Group 12-16(IIB-VIA) compd. thin **film** and thin-**film** heterostructure **electrodes** for use in photoelectrochem. cells were produced from their constituent elements using a 3-source vacuum-evapn. system. CdSe **films** with a wide variation in electronic properties were produced, characterized, and evaluated with efficiencies of .ltoreq.6.5% being recorded for **films** <2.0.mu. thick. ZnSe/CdSe heterostructure produced in situ yielded cells with open-circuit voltages >0.6 V and efficiencies >5.5%. Simultaneous elemental evapn. was also used to make CdSe1-xTex (x = 0.05-0.40) thin **films**, which had efficiencies of .ltoreq.7%. Also, the use of an aq. ferro-ferricyanide electrolyte resulted in efficiencies >7% for CdSe thin **films** and .apprx.15% for CdSe single-crystal **electrodes**.
IT **1315-09-9P**
(**electrodes** from cadmium selenide covered with, photoelectrochem., prepn. and properties of)
RN 1315-09-9 HCA

CN Zinc selenide (ZnSe) (9CI) (CA INDEX NAME)

Se=Zn

IT **1306-24-7P**, uses and miscellaneous **1306-25-8DP**, solid solns. with cadmium selenide
(**electrodes**, photoelectrochem., prepn. and properties of)
RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

RN 1306-25-8 HCA
CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST cadmium selenide photoelectrochem **electrode**; zinc selenide photoelectrochem **electrode**; telluride selenide cadmium photoelectrochem **electrode**; ferrocyanide selenide photoelectrochem cell
IT Photoelectric devices, solar
(photoelectrochem., Group 12-16 (IIB-VIA) compd. thin-**film**)
IT **1315-09-9P**
(**electrodes** from cadmium selenide covered with, photoelectrochem., prepn. and properties of)
IT 1306-24-7DP, solid solns. with cadmium telluride **1306-24-7P**, uses and miscellaneous **1306-25-8DP**, solid solns. with cadmium selenide
(**electrodes**, photoelectrochem., prepn. and properties of)

L55 ANSWER 18 OF 27 HCA COPYRIGHT 2003 ACS on STN
100:37151 Photoelectrochemical **electrodes**. Williams, Roger M.; Rembaum, Alan (United States National Aeronautics and Space Administration, USA). U. S. Pat. Appl. US 376306 A0 **19830930**, 29 pp. Avail. NTIS Order No. PAT-APPL-6-376 306. (English). CODEN: XAXXAV. APPLICATION: US 1982-376306 19820510.
AB The surface of a moderate band-gap semiconductor such as p-type MoS2 is modified to contain an adherent **film** of charge-mediating ionene polymer contg. an electroactive unit such as bipyridinium. Electron transport between the **electrode** and the mediator **film** is favorable and photocorrosion and recombination processes are suppressed. Incorporation of particles of catalyst such as Pt within the **film** provides a redn. in overvoltage. The polymer **film** is readily deposited on the

electrode surface and can be rendered stable by ionic or addn. crosslinking. Catalyst can be predispersed in the polymer **film** or a salt can be impregnated into the **film** and reduced there. Thus natural p-MoS2 crystals showed greatly enhanced visible light to chem. **energy conversion** efficiency following modification with a **film** composed of a charge-mediating polymer (crosslinked 4,4'-bipyridyl-chloromethylstyrene copolymer [88379-78-6]) and catalyst (Pt). Onset of dark currents for H synthesis indicated that the dark overpotential is reduced to .apprx.100 mV. Photoelectrochem. **energy conversion** efficiency was increased from .apprx.0 to 3.9% on modifying MoS2 surface with 2.5 mg polymer/cm2 and 0.25 mg Pt/cm2.

IT **12058-18-3**
(**electrodes**, **coated** with polymer contg. dispersed platinum, photoelectrochem.-cell)

RN 12058-18-3 HCA

CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Mo═Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72

ST photoelectrochem cell **electrode** molybdenum sulfide; bipyridyl chloromethylstyrene polymer **electrode** photoelectrochem; platinum bipyridyl chloromethylstyrene polymer **electrode**; hydrogen manuf photoelectrochem cell

IT **Electrodes**
(photoelectrochem., molybdenum chalcogenide, **coated** with ionic polymer contg. dispersed catalyst)

IT 88379-78-6
(crosslinked, **electrodes** from semiconductor **coated** with **layer** of catalysts-contg., photoelectrochem.-cell)

IT 7440-06-4, uses and miscellaneous
(**electrodes** from semiconductor **coated** with polymer contg. dispersed, photoelectrochem.-cell)

IT 1317-33-5, uses and miscellaneous **12058-18-3**
(**electrodes**, **coated** with polymer contg. dispersed platinum, photoelectrochem.-cell)

IT 32168-10-8 88375-40-0 88375-41-1 88375-42-2 88375-43-3 88375-44-4 88375-45-5
(ionene, **electrodes** from semiconductor **coated** with **layer** of catalysts-contg., photoelectrochem.-cell)

IT 1333-74-0P, preparation 7782-44-7P, preparation
(manuf. of, in photoelectrochem. cells, **electrodes** **coated** with ionic polymert contg. dispersed catalyst for)

L55 ANSWER 19 OF 27 HCA COPYRIGHT 2003 ACS on STN

98:110704 Semiconductors and semiconductor photoelectrodes. Manassen, Joost; Cahen, David; Hodes, Gary (Yeda Research and Development Co.,

Ltd., Israel). U.S. US 4368216 A **19830111**, 7 pp.
Cont.-in-part of U.S. 4,296,188. (English). CODEN: USXXAM.
APPLICATION: US 1980-173814 19800730. PRIORITY: IL 1979-58003
19790808; US 1980-134665 19800327.

AB Photoelectrodes are manufd. by prepg. a slurry of .gtoreq.1 semiconductor, a flux, and a liq. vehicle, applying a **layer** of the slurry to an elec. conductive substrate, and annealing the **layer**. Thus, powd. CdSe and ZnCl2 were ground together with a mixt. of 5% nonionic detergent in water. This paint was applied to a piece of preheated Ti. The **coated** Ti was heated at 650.degree. for 12 min in Ar contg. 20 ppm O. A photoelectrochem. cell contg. this **electrode**, a sulfided brass gauze counter **electrode**, and an electrolyte of aq. 1M KOH, 1M Na2S.9H2O, and 1M S gave under air-mass-1 conditions a short-circuit current (I) of 26.2 mA, an open-circuit voltage (V) of 530 mV, and a photopotential (P) of 388 mV over an optimal load of 24 .OMEGA.. After etching the CdSe **electrode** in 3% HNO3 in concd. HCl the same photoelectrochem. cell yielded I = 36.5 mA, V = 605 mV, and P = 424 mV over an optimal load of 17 .OMEGA.. After the **electrode** was dipped for 3 s in 1M aq. ZnCl2, the cell yielded I = 36.8 mA, V = 660 mV, and P = 463 mV over an optimal load of 18 .OMEGA..

IT **1306-24-7P**, uses and miscellaneous **1306-25-8DP**, solid solns. with cadmium sulfide and/or cadmium selenide **1306-25-8P**, uses and miscellaneous **1315-09-9P** **1315-11-3P**
(**electrodes**, photoelectrochem.-cell, prepn. and performance of)

RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

RN 1306-25-8 HCA
CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

RN 1306-25-8 HCA
CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

RN 1315-09-9 HCA
CN Zinc selenide (ZnSe) (9CI) (CA INDEX NAME)

Se=Zn

RN 1315-11-3 HCA
CN Zinc telluride (ZnTe) (8CI, 9CI) (CA INDEX NAME)

Te═ Zn

IC B05D003-02; H01M006-36
NCL 427074000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST semiconductor photoelectrochem cell **electrode**; cadmium selenide photoelectrochem cell **electrode**; zinc chloride flux photoelectrochem **electrode**; sodium sulfide photoelectrochem **cell electrolyte**
IT **Electrodes**
(photoelectrochem., semiconductive, prepn. and performance of)
IT 7440-47-3, uses and miscellaneous
(**electrodes** from semiconducting **layer** on steel plated with, photoelectrochem.-cell)
IT 7440-32-6, uses and miscellaneous 7782-42-5, uses and miscellaneous
(**electrodes** from semiconducting **layer** on, photoelectrochem.-cell)
IT 1303-00-0P, uses and miscellaneous 1306-23-6DP, solid solns. with cadmium selenide and/or cadmium telluride 1306-23-6P, uses and miscellaneous 1306-24-7DP, solid solns. with cadmium sulfide and/or cadmium telluride **1306-24-7P**, uses and miscellaneous **1306-25-8DP**, solid solns. with cadmium sulfide and/or cadmium selenide **1306-25-8P**, uses and miscellaneous 1315-09-9DP, solid solns. with cadmium selenide **1315-09-9P 1315-11-3P** 1317-33-5P, uses and miscellaneous 12018-94-9P
(**electrodes**, photoelectrochem.-cell, prepn. and performance of)
IT 7699-45-8
(flux from cadmium sulfate and, in manuf. of semiconductor **electrodes** for photoelectrochem. cells)
IT 10124-36-4
(flux from zinc chloride and, in manuf. of semiconductor **electrodes** for photoelectrochem. cells)
IT 10108-64-2
(flux, in manuf. of semiconductor **electrodes** for photoelectrochem. cells)
IT 1313-82-2, uses and miscellaneous
(photoelectrochem.-**cell electrolyte**, semiconductor)

L55 ANSWER 20 OF 27 HCA COPYRIGHT 2003 ACS on STN
97:117301 **Electrochemical** photovoltaic **cells** /stabilization and optimization of II-VI semiconductors. Noufi, R.; Tench, D.; Warren, L. (Rockwell Int. Corp., Thousand Oaks, CA, USA). Report, SERI/TR-9276-T3; Order No. DE82002093, 55 pp. Avail. NTIS From: Energy Res. Abstr. 1982, 7(5), Abstr. No. 10440 (English)

1981.

AB The goal of this program is to provide a basis for designing a practical **electrochem.** solar **cell** based on the Group II-VI compd. semiconductors. Emphasis is on developing new electrolyte redox systems and **electrode** surface modifications which will stabilize the Group II-VI compds. against photodissoln. without seriously degrading the long-term solar response. Although the MeOH ferro-ferricyanide soln. itself was photolytically unstable, study of this system led to the identification of more promising nonaq. redox electrolytes. Addn. work on redox couple stabilization of n-type CdX photoanodes was focused on both 1- and 2-electron couples. Very promising results were obtained for the alkylammonium chloroferrate (II,III) couple in MeCN. Conducting polymer **films** of polypyrrole photoelectrochem. deposited onto n-type semiconductors were shown to protect these **electrode** materials from photodecompn. while permitting electron exchange with the electrolyte. In a basic aq. ferro-ferricyanide electrolyte contg. cyanide ion, the measured open-circuit voltage for n-type CdTe was 1.3 V, which is practically the bandgap for this material. It now appears that polypyrrole **films** are to some extent permeable to solvent/solute species since the **film** stability depends on the nature of the redox electrolyte.

IT **1306-24-7**, uses and miscellaneous
(**anodes**, photoelectrochem., stabilization of)

RN 1306-24-7 HCA

CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

IT **1306-25-8**, properties
(elec. open-circuit potential of, in basic aq. soln. contg. cyanoferrate couple and cyanide ion)

RN 1306-25-8 HCA

CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

CC 72-2 (Electrochemistry)
Section cross-reference(s): 52, 76

ST solar cell semiconductor stabilization optimization; Group II chalcogenide photoelectrode stabilization; photoanode cadmium selenide stabilization; polypyrrole **film** stabilization photoelectrode; polyaniline **film** stabilization photoelectrode

IT **Electrodes**
(photoelectrochem., Group II chalcogenides, stabilization of)

IT **Anodes**
(photoelectrochem., cadmium selenide, stabilization of)

IT **1306-24-7**, uses and miscellaneous

(**anodes**, photoelectrochem., stabilization of)
IT 30604-81-0
(**coatings** of, on Group IIV chalcogenides **electrodes**, quality compn. prevention in relation to)
IT **1306-25-8**, properties
(elec. open-circuit potential of, in basic aq. soln. contg. cyanoferrate couple and cyanide ion)
IT 25233-30-1
(**films**, in stabilization of Group II chalcogenide semiconductor electrons)

L55 ANSWER 21 OF 27 HCA COPYRIGHT 2003 ACS on STN
94:211521 **Electrochemical** photovoltaic **cells** /stabilization and optimization of II-VI semiconductors. Noufi, R.; Tench, D.; Warren, L. (Rockwell Int. Corp., Thousand Oaks, CA, USA). Report, SERI/TR-8002/T1, 73 pp. Avail. NTIS From: Energy Res. Abstr. 1980, 5(24), Abstr. No. 37851 (English) **1980**.
AB Stabilization of n-CdSe against photodissoln. was achieved for the MeOH-(Et4N)4Fe(CN)6-(Et4N)3Fe(CN)6 system. No degrdn. of the photocurrent or the **electrode** surface, even in the presence of traces of H2O, was obsd. for runs of .ltoreq.700 h at 6 mA/cm2 and approx. air-mass-1 intensity. With higher quality single-crystal CdSe, stable short-circuit photocurrents of 15-17 mA/cm2 and an open-circuit voltage of 0.7 V were obtained, corresponding to a conversion efficiency of .apprx.5%. Preliminary evaluation of a series of S-contg. 1,2-dithiolene metal complexes for stabilization of Cd chalcogenide photoanodes in soln. was completed. For the 1st time, a conducting polymer **film** (derived from pyrrole) was electrochem. deposited on a semiconductor **electrode**. This could represent a breakthrough in the use of hydrophobic **films** to protect semiconductor photoanodes from dissoln./degrdn. Mixed CdSe-CdTe solid soln. **electrodes** were found to exhibit a min. in both the flatband potential and the bandgap at .apprx.65% CdTe. Both of these shifts would have a detrimental effect on the solar conversion efficiency.
IT **1306-24-7**, uses and miscellaneous
(**anodes**, photoelectrochem.-cell, optimization and stabilization of)
RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

IT **1306-25-8D**, solid solns. with cadmium selenide
(**anodes**, photoelectrochem.-cell, properties of)
RN 1306-25-8 HCA
CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT **1306-24-7**, uses and miscellaneous
(**anodes**, photoelectrochem.-cell, optimization and stabilization of)
IT 1306-24-7D, solid solns. with cadmium telluride **1306-25-8D**, solid solns. with cadmium selenide
(**anodes**, photoelectrochem.-cell, properties of)

L55 ANSWER 22 OF 27 HCA COPYRIGHT 2003 ACS on STN
94:106551 Active **electrodes** for **electrochemical battery cells** with redox systems. Hodes, Gary; Manassen, Joost; Cahen, David (Yeda Research and Development Co. Ltd., Israel). Ger. Offen. DE 3004262 **19800904**, 20 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1980-3004262 19800206.
AB **Electrodes** for the title S/S2-, Se/Se2-, and Te/Te2- **batteries** and photoelectrochem. cells comprise an active material-**coated** substrate of steel, stainless steel, porous C, graphite, Co, Ti, Ta, W, Mo, V, and Cr. The possible active materials are CoS, Cu2S, RuS2, MoS2, PbSe, Cu2Se, and NiTe. Thus, several chalcogenide-**coated** stainless steel **electrodes** were prepd. and their properties in photoelectrochem. cells were measured.
IT **1314-05-2 1314-91-6D**, solid solns. with lead selenide **11115-77-8 12017-13-9D**, solid solns. with cobalt selenide **12142-88-0D**, solid solns. with nickel selenide **39280-96-1**
(**electrodes** from stainless steel **coated** with, photoelectrochem.-cell)
RN 1314-05-2 HCA
CN Nickel selenide (NiSe) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Ni═Se

RN 1314-91-6 HCA
CN Lead telluride (PbTe) (6CI, 8CI, 9CI) (CA INDEX NAME)

Pb═Te

RN 11115-77-8 HCA
CN Cobalt telluride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Te	x	13494-80-9
Co	x	7440-48-4

RN 12017-13-9 HCA
CN Cobalt telluride (CoTe) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Co═Te

RN 12142-88-0 HCA
CN Nickel telluride (NiTe) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Ni═Te

RN 39280-96-1 HCA
CN Lead telluride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Te	x	13494-80-9
Pb	x	7439-92-1

IC H01M004-58; H01M010-36; H01M014-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST chalcogenide **electrode** photoelectrochem cell; stainless steel chalcogenide **coating electrode**; **battery** redox chalcogenide **electrode**; sulfide **electrode** photoelectrochem cell; selenide **electrode** photoelectrochem cell; telluride **electrode** photoelectrochem cell
IT **Electrodes**
(photoelectrochem.-cell, chalcogenide-**coated** stainless steel)
IT 22205-45-4
(**electrodes** from brass **coated** with, photoelectrochem.-cell)
IT 12597-68-1, uses and miscellaneous
(**electrodes** from chalcogenide-**coated**, photoelectrochem.-cell)
IT 12597-71-6, uses and miscellaneous
(**electrodes** from copper sulfide-**coated**, photoelectrochem.-cell)
IT 1317-33-5, uses and miscellaneous
(**electrodes** from molybdenum **coated** with, photoelectrochem.-cell)
IT 7439-98-7, uses and miscellaneous
(**electrodes** from molybdenum disulfide-**coated**, photoelectrochem.-cell)
IT 1307-99-9D, solid solns. with cobalt telluride **1314-05-2** 1314-05-2D, solid solns. with nickel telluride 1314-87-0D, solid solns. with lead selenide **1314-91-6D**, solid solns. with lead selenide 1317-42-6 11113-75-0 **11115-77-8** **12017-13-9D**, solid solns. with cobalt selenide 12069-00-0D, solid solns. with lead sulfide and with lead telluride **12142-88-0D**, solid solns. with nickel selenide 37245-92-4 **39280-96-1**

(**electrodes** from stainless steel **coated** with, photoelectrochem.-cell)

L55 ANSWER 23 OF 27 HCA COPYRIGHT 2003 ACS on STN
91:143244 On the photopotential output of **electrochemical** solar **cells** based on **layer**-type d-band semiconductors. Tributsch, H.; Gerischer, H.; Clemen, C.; Bucher, E. (Fritz-Haber-Inst., Max-Planck-Ges., Berlin, D-1000/33, Fed. Rep. Ger.). Berichte der Bunsen-Gesellschaft, 83(7), 655-8 (English) **1979**. CODEN: BBPCAX. ISSN: 0005-9021.

AB A comparative study of Mo and W-dichalcogenides in contact with various redox electrolytes revealed that in abs. values as well as in relation to the energy gap, n-type WSe2 is producing the largest photopotential output. It exceeds 0.55 V in presence of several redox couples (Fe2+/3+, hydroquinone/quinone pH = 10, Fe(CN)63-/4-, Ru3+/4+, Br-/Br2, Ce3+/4+) and amts. to more than 0.7 V in presence of I-/I2. Addn. of small quantities of iodide can increase the photopotential output in presence of redox systems with lower redox potential by .ltoreq.0.1 V. This gives further evidence for the specific photochem. surface activity of iodide on **layer** -type **electrodes** and is an example for the influence of surface states on the efficiency of **energy conversion**. The higher photopotential output of WSe2 as compared to that of MoSe2 (max. value I-/I2, 0.56 V) is explained in terms of a neg. shift of the conduction band edge. With respect to the efficiency of electrochem. solar **energy conversion** WSe2 is considered to be the most promising compd. among **layer**-type d-band semiconductors.

IT **12058-18-3 12058-20-7 12067-46-8**
(**electrodes**, photoelectrochem. cells contg., properties of)

RN 12058-18-3 HCA
CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Mo═Se

RN 12058-20-7 HCA
CN Molybdenum telluride (MoTe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Te═Mo═Te

RN 12067-46-8 HCA
CN Tungsten selenide (WSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═W═Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST selenide tungsten photoelectrochem cell; molybdenum selenide photoelectrochem cell; chalcogenide **layer** type

photoelectrochem cell
IT Iodides, uses and miscellaneous
(photoelectrochem. cells contg., properties of **layer** -type d-band semiconductors in)
IT 1317-33-5, uses and miscellaneous **12058-18-3** **12058-20-7** **12067-46-8**
(**electrodes**, photoelectrochem. cells contg., properties of)

L55 ANSWER 24 OF 27 HCA COPYRIGHT 2003 ACS on STN
89:82158 **Electrode** for electrolytic process involving hydrogen generation. Westerlund, H. Benny (Gow Enterprises Ltd., Can.). U.S. US 4089771 **19780516**, 6 pp. (English). CODEN: USXXAM. APPLICATION: US 1977-806409 19770614.
AB A Ti bipolar **electrode** is described. The central core is of Ti expanded metal sheet and an extension of this provides the **anodic** surface which may be coated, e.g., by Pt as is a well known practice. The **cathodic** surface may be activated to provide a hydride surface or coated with MoS2 or with Ag then MoS2. The **electrode** space is on the exposed side of the **cathodic** element and is of a non-conductive material such as Kel-F or Teflon. The **electrode** was tested in brine **electrolysis** and ClO3- **cells**.
IT **1317-33-5**, uses and miscellaneous
(coatings, on titanium porous bipolar **electrodes**)
RN 1317-33-5 HCA
CN Molybdenum sulfide (MoS2) (8CI, 9CI) (CA INDEX NAME)

S═Mo═S

IC C25B011-03
NCL 204284000
CC 72-10 (Electrochemistry)
ST titanium bipolar **electrode** brine chlorate; molybdenum sulfide coating titanium **electrode**
IT Brines
(electrolysis of, porous bipolar titanium **electrodes** for)
IT **Coating materials**
(molybdenum sulfide, on porous bipolar titanium **electrodes**)
IT **1317-33-5**, uses and miscellaneous
(coatings, on titanium porous bipolar **electrodes**)
IT 7440-32-6, uses and miscellaneous
(**electrodes**, bipolar, porous, molybdenum disulfide coated)
IT 1333-74-0P, preparation
(generation of, **electrode** for)
IT 14866-68-3P
(manuf. of, porous bipolar titanium **electrodes** for)

L55 ANSWER 25 OF 27 HCA COPYRIGHT 2003 ACS on STN
89:46261 Chalcogenides of arsenic, antimony and bismuth as positive **electrodes** in lithium **batteries**. Besenhard, Juergen O. (Anorg.-Chem. Inst., Tech. Univ. Muenchen, Munich, Fed. Rep. Ger.). Zeitschrift fuer Naturforschung, Teil B: Anorganische Chemie, Organische Chemie, 33B(3), 279-83 (German) **1978**. CODEN: ZNBAD2. ISSN: 0340-5087.

AB Redox properties of **layer**-type chalcogenides of Group VA elements were investigated in molten salt and org. Li+-contg. electrolytes. Even at room temp., Bi2S3, Bi2Se3, and Bi2Te3 can be reduced with .apprx.100% efficiency to Li3Bi as final product. The redn. of Bi2S3 to Bi0 and LiS can be reversed in org. electrolytes.

IT **1304-82-1 12068-69-8**
(**cathodes**, in **batteries** with lithium **anode**, properties of)

RN 1304-82-1 HCA
CN Bismuth telluride (Bi2Te3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 12068-69-8 HCA
CN Bismuth selenide (Bi2Se3) (6CI, 8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	3	7782-49-2
Bi	2	7440-69-9

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST antimony chalcogenide **battery cathode**; arsenic chalcogenide **battery cathode**; bismuth chalcogenide **battery cathode**; sulfide bismuth **battery cathode**; selenide bismuth **battery cathode**; telluride bismuth **battery cathode** ; lithium **battery** chalcogenide **cathode**
IT **Cathodes**
(**battery**, chalcogenides of arsenic, antimony and bismuth, properties of)
IT 1303-33-9 **1304-82-1** 1345-04-6 1345-07-9 **12068-69-8**
(**cathodes**, in **batteries** with lithium **anode**, properties of)

L55 ANSWER 26 OF 27 HCA COPYRIGHT 2003 ACS on STN
85:180084 Semiconductor-electrolyte photovoltaic **energy converter**. Anderson, William W.; Anderson, Larry B. (Dep. Electr. Eng., Ohio State Univ., Columbus, OH, USA). NASA Contract. Rep., NASA-CR-143107,f., 1st, 1975, 702-12 (English) **1975**. CODEN: NSCRAQ.

AB Feasibility and practicality of a solar cell consisting of a semiconductor surface in contact with an electrolyte are considered. Characteristics of single crystal CdS, CdSe, CdTe, GaAs, and thin-**film** CdS in contact with aq. and MeOH electrolytes are

reported.
IT **1306-24-7 1306-25-8**
(**electrodes**, photoelectrochem.-cell, characteristics and soln. stability of)
RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

RN 1306-25-8 HCA
CN Cadmium telluride (CdTe) (9CI) (CA INDEX NAME)

Cd=Te

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Photoelectric **cells**
(solar, **electrolyte**-semiconductor, characteristics and practicality of)
IT 1303-00-0, uses and miscellaneous 1306-23-6, uses and miscellaneous **1306-24-7 1306-25-8**
(**electrodes**, photoelectrochem.-cell, characteristics and soln. stability of)

L55 ANSWER 27 OF 27 HCA COPYRIGHT 2003 ACS on STN
79:99856 Alkali metal/sulfur **battery** having a **cathodic** current collector coated with molybdenum disulfide. Stringham, Robert R.; Taplin, William H. (Dow Chemical Co.). U.S. US 3749603 **19730731**, 6 pp. (English). CODEN: USXXAM. APPLICATION: US 1972-244410 19720417.
AB An alkali metal/S **battery** having as a **cathodic** current collector a shaped member comprising a substrate on which there is a 50-5000 .ANG. thick coating of MoS2 is disclosed. The substrate can be an outer layer or may constitute the entire member and consists essentially of Al, Mg or alloys contg. at least minor amts. of these metals. The elec. resistance of the coated **cathode** generally drops to a min. upon being contacted with a molten alkali metal polysulfide for a brief time. Test specimens were prepd. by cutting in half a 5/16 .times. 3 in. strip of the sheet or foil. After pretreatment, specimens were bolted to stainless steel lead-in wires, spaced apart by a 1/8 in. thick glass bar at their upper ends and inserted in a test tube. The tube was filled with Na2S4 in a dry box and placed in a heating block while connected to a low pressure purge of dry N. When the sulfide melted, the position of the strips was adjusted, if necessary, so that 10 cm2 of surface on each strip was in contact with the melt. A temp. of 300.degree. was maintained. A test voltage of 100 mV d.c. was applied, with the polarity being reversed automatically at 0.5-hr. intervals. The surface resistance after any interval of test duration was detd.
IT **1317-33-5**

(coatings, on aluminum alloys, for **cathodes** for alkali metal-sulfur **batteries**)
RN 1317-33-5 HCA
CN Molybdenum sulfide (MoS2) (8CI, 9CI) (CA INDEX NAME)

S=Mo=S

IC H01M
NCL 136006000
CC 77-2 (Electrochemistry)
ST alkali metal sulfur **battery**; molybdenum sulfide **cathode** collector
IT **Batteries**, secondary
(alkali metal-sulfur, molybdenum disulfide coatings on **cathode** substrates in)
IT **Coating materials**
(molybdenum disulfide, on aluminum alloys, for **cathodes** for alkali metal-sulfur **batteries**)
IT 11146-12-6 12608-67-2 42614-09-5
(coatings on, of molybdenum disulfide, for **cathode** in alkali metal-sulfur **batteries**)
IT **1317-33-5**
(coatings, on aluminum alloys, for **cathodes** for alkali metal-sulfur **batteries**)

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L56 ANSWER 1 OF 18 HCA COPYRIGHT 2003 ACS on STN
118:106330 Secondary lithium **batteries** with **coated anodes**. Kanbara, Teruhisa; Sato, Yoshiko; Uemachi, Yasushi; Matsuda, Hiromu; Tonomura, Tadashi; Takeyama, Kenichi (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 04248276 A2 **19920903** Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-7502 19910125.
AB The **batteries** use Li+-conductive electrolytes, Li=-conductive **cathodes**, and Li (alloy) **anodes** **coated** with a substance having both Li+ and electron cond. Preferably, the **coating** substances are graphitic C or transition metal dichalcogenides.
IT **12058-18-3**, Molybdenum selenide (MoSe2)
(**coatings**, lithium **anodes** contg., for secondary **batteries**)
RN 12058-18-3 HCA
CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se=Mo=Se

IC ICM H01M010-40
ICS H01M004-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery anode** carbon **coating**; chalcogenide **coating** lithium **anode**; molybdenum sulfide **coating** lithium **anode**
IT Transition metal chalcogenides
(**coatings**, lithium **anodes** contg., for secondary **batteries**)
IT **Anodes**
(**battery**, lithium, with lithium ion- and electron-conductive **coatings**, for dendrite growth prevention)
IT Lithium alloy, base
(**anodes**, with lithium ion- and electron-conductive **coatings**, for secondary **batteries**)
IT 7439-93-2, Lithium, uses
(**anodes**, with lithium ion- and electron-conductive **coatings**, for secondary **batteries**)
IT 1317-33-5, Molybdenum sulfide (MoS2), uses 7782-42-5, Graphite, uses 12039-13-3, Titanium sulfide (TiS2) **12058-18-3**, Molybdenum selenide (MoSe2) 12136-97-9, Niobium sulfide (NbS2)
(**coatings**, lithium **anodes** contg., for secondary **batteries**)

L56 ANSWER 2 OF 18 HCA COPYRIGHT 2003 ACS on STN
114:9642 Solid-state alkali metal **batteries** having porous **cathode** current collectors. Fauteux, Denis G.; Moore, Michael J.; Blonsky, Peter M. (USA). U.S. US 4925752 A **19900515**, 7 pp. (English). CODEN: USXXAM. APPLICATION: US 1989-319434 19890303.
AB A laminar **battery** comprises an alkali metal **anode** (Li foil, a metal foil **coated** with a **layer** of Li or Li alloy), a solid ionically conducting electrolyte **layer**, and a **cathode**/current collector **layer**, which consists of an elec. conductive substrate having a plurality of surface voids and a radiation-cured **cathode** compn. The compn. comprises a compd. such as V6O13, MoO2, TiS2, FeOCl; an elec. conductive filler (C particles); and a radiation-cured ionically conductive electrolyte. The electrolyte comprises a solid soln. of an ionizable alkali metal or alk. earth salt and an ionically conductive polymer contg. a repeating unit CH2C(H)(R)O, CHCH2NR1, or CH2CH(OR3R2), where R is H, R2, CH2OR2, CH2OR3R2, CH2NMe2; R1 is R2 or R3R2, R2 is C1-16 (preferably C1-4) alkyl or C5-8 cycloalkyl group and R3 is an ether group. The conductive substrate is C, Cu, Al, Ni, steel, and/or Pb. The importance of roughened surface of the conductive substrate (etched Ni foil, Ni felt) on the Li **battery** performance was demonstrated. The **battery** **cathode** mixt. consisted of V6O13 45, C 4, and electrolyte 51%. The electrolyte consisted of propylene carbonate 70, PEO 3, LiCF3SO3 6, and radiation-curable acrylate 21%.
IT **12034-77-4**, Niobium diselenide
(**cathodes**, contg. alkali metal or alk. earth salt and conductive polymer, current collectors for, in **batteries**

)
RN 12034-77-4 HCA
CN Niobium selenide (NbSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Nb═Se

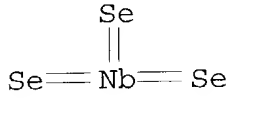
IC ICM H01M006-18
NCL 429191000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST lithium vanadium oxide **battery**; **cathode** etched nickel current collector; solid electrolyte lithium vanadium **battery**
IT Acrylic polymers, uses and miscellaneous
(electrolytes from lithium-PEO complexes and propylene carbonate and, for **batteries**)
IT **Cathodes**
(**battery**, vanadium oxide, contg. lithium trifluoromethanesulfonate and conductive polymer, with etched nickel current collector)
IT 7429-90-5, Aluminum, uses and miscellaneous 7439-92-1, Lead, uses and miscellaneous 7440-02-0, Nickel, uses and miscellaneous 7440-44-0, Carbon, uses and miscellaneous 7440-50-8, Copper, uses and miscellaneous 12597-69-2, Steel, uses and miscellaneous
(**cathode** collector, surface etched, for **batteries**)
IT 1307-96-6, Cobalt oxide (CoO), uses and miscellaneous 1313-13-9, Manganese dioxide, uses and miscellaneous 1314-62-1, Vanadium oxide (V2O5), uses and miscellaneous 1317-37-9, Iron sulfide (FeS) 1317-38-0, Copper oxide (CuO), uses and miscellaneous 11126-15-1, Lithium vanadium oxide 12018-01-8, Chromium oxide (CrO2) 12033-29-3, Molybdenum sulfide (MoS3) **12034-77-4**, Niobium diselenide 12039-13-3, Titanium disulfide 12137-52-9, Vanadium oxide (V3O8) 12166-28-8, Vanadium disulfide 13870-10-5, Iron chloride oxide (FeClO) 15915-20-5, Chromium oxybromide (CrOBr) 16812-54-7, Nickel sulfide (NiS) 18868-43-4, Molybdenum oxide (MoO2)
(**cathodes**, contg. alkali metal or alk. earth salt and conductive polymer, current collectors for, in **batteries**)
IT 12037-42-2, Vanadium oxide (V6O13)
(**cathodes**, contg. lithium trifluoromethanesulfonate, current collectros for, in **batteries**)
IT 108-32-7, Propylene carbonate
(electrolytes from lithium-PEO complexes and radiation-curable acrylate and, for **batteries**)
IT 7439-93-2D, Lithium, PEO complexes 25322-68-3D, PEO, lithium complexes
(electrolytes from propylene carbnate and radiation-curable acrylate and, for **batteries**)

L56 ANSWER 3 OF 18 HCA COPYRIGHT 2003 ACS on STN
108:207653 Studies on niobium triselenide **cathode** material for lithium rechargeable cells. Ratnakumar, B. V.; Ni, C. L.; DiStefano, S.; Somoano, R. B.; Bankston, C. P. (Jet Propul. Lab., California Inst. Technol., Pasadena, CA, 91109, USA). Proceedings - Electrochemical Society, 88-6(Proc. Symp. Primary Second. Ambient Temp. Lithium Batteries, 1987), 565-80 (English) **1988**. CODEN: PESODO. ISSN: 0161-6374.

AB NbSe3 **cathode** intercalates reversibly with 3 equivs. Li at a utilization efficiency of .apprx.90%. The Li intercalation occurs at different closely spaced potentials between 1500 and 1800 mV vs. Li+/Li. The kinetics of NbSe3 redn. is essentially governed by the slow diffusion of Li ions inside the **layered cathode**. The exchange c.d. and apparent transfer coeff. are 32 .mu.A/cm2 and 0.21, resp. The prepn., characterization, and performance of NbSe3 are described. Several electrochem. techniques (cyclic voltammetry, const. current/const. potential discharge, d.c. potentiodynamic scans, a.c. impedance, and a.c. voltammetry) were used to study the Li intercalation mechanism. A phys. model is presented to illustrate the various steps involved in NbSe3 redn.

IT **12034-78-5**, Niobium triselenide
(**cathodes**, for lithium rechargeable **batteries**
)

RN 12034-78-5 HCA
CN Niobium selenide (NbSe3) (7CI, 9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

ST niobium selenide **cathode** lithium **battery**; intercalation **cathode** niobium selenide **battery**

IT Electrolytic polarization
(of niobium selenide prismatic **cathode**, in lithium hexafluoroarsenate-methyltetrahydrofuran electrolyte)

IT **Cathodes**
(**battery**, intercalation, niobium selenide, for lithium rechargeable **batteries**)

IT **12034-78-5**, Niobium triselenide
(**cathodes**, for lithium rechargeable **batteries**
)

IT 55886-04-9P, Lithium niobium selenide (Li3NbSe3)
(formation of, in discharge of lithium-niobium triselenide **battery cathode**)

IT 61673-65-2P, Lithium niobium selenide
(intercalated, formation of, in discharge of lithium-niobium triselenide **battery cathode**)

L56 ANSWER 4 OF 18 HCA COPYRIGHT 2003 ACS on STN

105:199063 Photoelectrochemical cells with n-type zinc selenide and n-type antimony selenide (Sb2Se3) thin **film** semiconductor **electrodes**. Roy, C. B.; Nandi, D. K.; Mahapatra, P. K. (Dep. Chem., Indian Inst. Technol., Kharagpur, India). Electrochimica Acta, 31(10), 1227-9 (English) **1986**. CODEN: ELCAAV. ISSN: 0013-4686.

AB Photoelectrochem. cells with thin **film** semiconductor **electrode** made of ZnSe or Sb2Se3 and a platinized Pt **electrode** as counter **electrode** with I-/I3- electrolyte were investigated. The max. efficiency was obsd. with the cells for light wavelength .apprx.600 nm. The conversion efficiencies of the cells with ZnSe **electrode** and Sb2Se3 **electrode** were 0.03% and 0.13%, resp., with light intensity of 92 mW cm-2.

IT **1315-05-5 1315-09-9**
(**electrodes**, photoelectrochem. semiconductive)

RN 1315-05-5 HCA
CN Antimony selenide (Sb2Se3) (8CI, 9CI) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1315-09-9 HCA
CN Zinc selenide (ZnSe) (9CI) (CA INDEX NAME)

Se=Zn

CC 72-2 (Electrochemistry)
Section cross-reference(s): 52, 76

ST antimony selenide photoelectrochem semiconductive **electrode** ; zinc selenide photoelectrochem semiconductive **electrode**; selenide antimony zinc photoelectrochem **electrode**; iodide redox **electrolyte** photoelectrochem **cell**

IT **Electrodes**
(photoelectrochem., semiconductive, antimony selenide and zinc selenide)

IT 7440-06-4, uses and miscellaneous
(**electrode**, counter, in photoelectrochem. cell with antimony selenide or zinc selenide semiconductive **electrodes** and iodide/triiodide redox electrolyte)

IT **1315-05-5 1315-09-9**
(**electrodes**, photoelectrochem. semiconductive)

L56 ANSWER 5 OF 18 HCA COPYRIGHT 2003 ACS on STN
105:82296 Correction of: 97:147577 Semiconductor **electrodes** in contact with aqueous and nonaqueous redox-electrolytes for photovoltaic solar **energy conversion**..
Gerischer, H.; Decker, F.; Kautek, W. (Fritz-Haber-Inst., Max-Planck-Ges., Berlin, D-1000, Fed. Rep. Ger.). Solar Energy R&D in the European Community, Series D: Photochemical, Photoelectrochemical and Photobiological Processes, 1(Photochem., Photoelectrochem. Photobiol. Processes), 88-93 (English) **1982**. CODEN: SRDDD6. ISSN: 0167-7950.

AB The exceptional behavior of I-/I3- system in contact with

transition-metal dichalcogenide (MoS2, MoSe2, and WSe2) photoelectrodes, and **electrodes** of semiconductor oxide heterojunctions for photoelectrolysis are discussed. SnO2- and In2O3-**coated** n-Si were tested in different aq. solns. and the chem. and electrochem. stability of such **electrodes** against corrosion was proved.

IT **12058-18-3 12067-46-8**
(**electrodes**, photoelectrochem.-cell, performance of, in aq. redox electrolytes)

RN 12058-18-3 HCA
CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Mo═Se

RN 12067-46-8 HCA
CN Tungsten selenide (WSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═W═Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

ST photoelectrochem cell **electrode** molybdenum sulfide; selenide molybdenum photoelectrochem cell; tungsten selenide photoelectrochem cell; silicon tin oxide photoelectrochem cell; indium oxide silicon photoelectrochem cell; iodide photoelectrochem **cell electrolyte**

IT **Electrodes**
(photoelectrochem., semiconductive, performance of, in aq. and nonaq. redox electrolytes)

IT 7440-21-3, uses and miscellaneous
(**electrodes** from indium oxide- or tin oxide-**coated**, photoelectrochem.-cell, performance of)

IT 1312-43-2 18282-10-5
(**electrodes** from silicon **coated** with, photoelectrochem.-cell, performance of)

IT **12058-18-3 12067-46-8**
(**electrodes**, photoelectrochem.-cell, performance of, in aq. redox electrolytes)

IT 14900-04-0
(**electrolyte** contg., photoelectrochem.-**cell**, performance of molybdenum and tungsten chalcogenide **electrodes** in aq.)

L56 ANSWER 6 OF 18 HCA COPYRIGHT 2003 ACS on STN
104:92052 Optical **energy conversion** in photoelectrochemical cells with semiconductor **electrodes**.
Maruyama, Toshiro; Goto, Kazuhito (Coll. Eng., Kyoto Univ., Kyoto, Japan). Kagaku Kogaku, 50(1), 58-61 (Japanese) **1986**.
CODEN: KKGKA4. ISSN: 0375-9253.

AB Polycryst. semiconductor **films** for regeneration-type

photoelectrochem. cells were made of CdSe and TiO2 by electrophoretic pptn. The current-potential property and solar **energy conversion** efficiency of the thin **films** as **anodes** were studied.

IT **1306-24-7P**, uses and miscellaneous
(**electrodes**, photoelectrochem., prepn. and properties of)

RN 1306-24-7 HCA

CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST cadmium selenide photoelectrochem **electrode**; titania photoelectrochem **electrode**

IT **Anodes**
(photoelectrochem., cadmium selenide and titania, prepn. and properties of)

IT **1306-24-7P**, uses and miscellaneous 13463-67-7P, uses and miscellaneous
(**electrodes**, photoelectrochem., prepn. and properties of)

L56 ANSWER 7 OF 18 HCA COPYRIGHT 2003 ACS on STN

101:100115 Semiconductor-electrolyte photoelectrode systems. IV. Electrodeposition and photoelectrochemical properties of manganese selenide (MnSe) **film electrode**. Song, Tianping; Wang, Yujiang; Lu, Wenzhe; Yang, Jun; Mi, Tianying (Changchun Inst. Appl. Chem., Acad. Sin., Changchun, Peop. Rep. China). Zhongguo Kexueyuan Changchun Yingyong Huaxue Yanjiuso Jikan, 19, 34-42 (Chinese) **1982**. CODEN: ZKCJEE.

AB The bandgap of the electrodeposited MnSe was estd. by photoacoustic measurements to be about 1.91 eV in agreement with that reported in literature. Photoelectrochem. measurements showed typical photovoltaic characteristics with **energy conversion** efficiency about 1% under Xe light of moderate intensity. Doping (by codeposition) of certain rare-earth (such as Pr, Sm, etc.) ions considerably enhanced the photoeffects of the MnSe **electrode**.

IT **37320-90-4**
(**electrodes**, photoelectrochem.)

RN 37320-90-4 HCA

CN Manganese selenide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Se	x	7782-49-2
Mn	x	7439-96-5

CC 72-2 (Electrochemistry)

Section cross-reference(s): 76
ST manganese selenide photoelectrochem **electrode**; rare earth doping manganese selenide
IT Rare earth metals, uses and miscellaneous
(doping with, of manganese selenide photoelectrochem. **electrodes**)
IT **Electrodes**
(photoelectrochem., manganese selenide)
IT **37320-90-4**
(**electrodes**, photoelectrochem.)

L56 ANSWER 8 OF 18 HCA COPYRIGHT 2003 ACS on STN
99:215705 **Electrochemical** solar **cells** with **layer**-type semiconductor **anodes**. Stabilization of the semiconductor **electrode** by selective polyindole electrodeposition. Fornarini, L.; Stirpe, F.; Scrosati, B. (Ist. Chim. Fis., Univ. Rome, Rome, Italy). Journal of the Electrochemical Society, 130(11), 2184-7 (English) **1983**. CODEN: JESOAN. ISSN: 0013-4651.
AB Electropolymn. of indole was investigated on Pt and MoSe2 **electrodes**. When performed in the dark, the electropolymn. is selectively directed to the surface defects of the semiconductor. The effect of this surface treatment was investigated. The electropolymn. of indole effectively blocks the defect sites and produces a stable improvement on the output characteristics of photoelectrochem. cells with **layer**-type semiconductor **anodes**.
IT **12058-18-3**
(**anodes** from polyindole-stabilized, photoelectrochem.-cell)
RN 12058-18-3 HCA
CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se=Mo=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72
ST platinum polyindole **electrode**; molybdenum selenide polyindole photoelectrochem cell; **electrode** molybdenum selenide polyindole photoelectrochem
IT **Anodes**
(photoelectrochem., molybdenum selenide, polyindole-stabilized)
IT **12058-18-3**
(**anodes** from polyindole-stabilized, photoelectrochem.-cell)
IT 82451-55-6
(**anodes** stabilized with, **layer**-type semiconductor, photoelectrochem.-cell)
IT 7440-06-4, uses and miscellaneous
(**electrodes**, contg. deposited polyindole, voltammogram of, in aq. iodide-iodine)

L56 ANSWER 9 OF 18 HCA COPYRIGHT 2003 ACS on STN
98:92635 **Electrochemical** solar **cells** using cadmium selenide thin-**film electrodes**. Xiao, Xu Rui; Tien, H. Ti (Dep. Biophys., Michigan State Univ., East Lansing, MI, 48824, USA). Journal of the Electrochemical Society, 130(1), 55-9 (English) **1983**. CODEN: JESOAN. ISSN: 0013-4651.

AB Electrochem. photocells of a CdSe thin-**film anode** and a Pt **cathode** immersed in M Na2S-NaOH-S soln. were studied. CdSe thin **films** were formed on Ti, Cr, Mo, SnO2, glassy C, and graphite substrates by **coating** an aq. mixt. of CdSe, ZnCl2, and a surfactant and subsequently sintering at 400-500.degree. in air. The current-voltage (I-V) relations, output power efficiency, open-circuit voltage, and short-circuit current were measured. A 7% power conversion efficiency was obtained at 20 mW/cm2 light intensity after photoetching. The monochromatic I-V curves were analyzed.

IT **1306-24-7**, uses and miscellaneous
(**anodes**, photoelectrochem.-cell, performance of thin-**film**)

RN 1306-24-7 HCA

CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST photoelectrochem cell cadmium selenide **electrode**; titanium cadmium selenide photoelectrochem **electrode**; chromium cadmium selenide photoelectrochem **electrode**; molybdenum cadmium selenide photoelectrochem **electrode**; carbon cadmium selenide photoelectrochem **electrode**; graphite cadmium selenide photoelectrochem **electrode**; tin dioxide cadmium selenide **electrode**

IT **Anodes**
Photoelectric devices, solar
(photoelectrochem., cadmium selenide, performance of thin-**film**)

IT **1306-24-7**, uses and miscellaneous
(**anodes**, photoelectrochem.-cell, performance of thin-**film**)

IT 7439-98-7, uses and miscellaneous 7440-32-6, uses and miscellaneous 7440-47-3, uses and miscellaneous 7782-42-5, uses and miscellaneous 18282-10-5
(**electrodes** from cadmium selenide-**coated**, photoelectrochem.-cell, performance of thin-**film**)

IT 7440-44-0, uses and miscellaneous
(glassy, **electrodes** from cadmium selenide-**coated**, photoelectrochem.-cell, performance of thin-**film**)

L56 ANSWER 10 OF 18 HCA COPYRIGHT 2003 ACS on STN

97:147577 Semiconductor **electrodes** in contact with aqueous and nonaqueous redox-electrolytes for photovoltaic solar **energy conversion**. Gerischer, H.; Decker, F.; Kautek, W. (Fritz-Haber-Inst., Max-Planck-Ges., Berlin, D-1000/33, Fed. Rep. Ger.). Solar Energy R&D in the European Community, Series D: Photochemical, Photoelectrochemical and Photobiological Processes, 1(Photochem., Photoelectrochem. Photobiol. Processes), 88-93 (English) **1982**. CODEN: SRDDD6. ISSN: 0167-7950.

AB The exceptional behavior of I-/I3- system in contact with transition-metal dichalcogenide (MoS2, MoSe2, and WSe2) photoelectrodes, and **electrodes** of semiconductor oxide heterojunctions for photoelectrolysis are discussed. SnO2- and Tn2O3-**coated** n-Si were tested in different aq. solns. and the chem. and electrochem. stability of such **electrodes** against corrosion was proved.

IT **12058-18-3 12067-46-8**
(**electrodes**, photoelectrochem.-cell, performance of, in aq. redox electrolytes)

RN 12058-18-3 HCA

CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Mo═Se

RN 12067-46-8 HCA

CN Tungsten selenide (WSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═W═Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

ST photoelectrochem cell **electrode** molybdenum sulfide; selenide molybdenum photoelectrochem cell; tungsten selenide photoelectrochem cell; silicon tin oxide photoelectrochem cell; indium oxide silicon photoelectrochem cell; iodide photoelectrochem **cell electrolyte**

IT **Electrodes**
(photoelectrochem., semiconductive, performance of, in aq. and nonaq. redox electrolytes)

IT 7440-21-3, uses and miscellaneous
(**electrodes** from indium oxide- or tin oxide-**coated**, photoelectrochem.-cell, performance of)

IT 1312-43-2 18282-10-5
(**electrodes** from silicon **coated** with, photoelectrochem.-cell, performance of)

IT **12058-18-3 12067-46-8**
(**electrodes**, photoelectrochem.-cell, performance of, in aq. redox electrolytes)

IT 14900-04-0
(**electrolyte** contg., photoelectrochem.-**cell**, performance of molybdenum and tungsten chalcogenide

electrodes in aq.)

L56 ANSWER 11 OF 18 HCA COPYRIGHT 2003 ACS on STN
96:202533 **Electrochemical** solar **cells** with **layer**-type semiconductor **anodes**. Nonaqueous **electrolyte cells**. Fornarini, L.; Stirpe, F.; Scrosati, B. (Ist. Chim. Fis., Univ. Rome, Rome, Italy). Journal of the Electrochemical Society, 129(5), 1155-6 (English) **1982**. CODEN: JESOAN. ISSN: 0013-4651.

AB The output characteristics of the n-MoSe2|3 KI, 0.15M I2, formamide|Pt cell are promising, showing fill-factor and efficiency values which approach those obtained in aq. solns. No degrdn. in the cell was obsd. after continuous operation at the max. power point for >1 wk.

IT **12058-18-3**
(**electrodes**, photoelectrochem. cells contg., performance of nonaq.)

RN 12058-18-3 HCA
CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Mo═Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT **12058-18-3**
(**electrodes**, photoelectrochem. cells contg., performance of nonaq.)

L56 ANSWER 12 OF 18 HCA COPYRIGHT 2003 ACS on STN
96:151221 Semiconductor **electrodes**. 44. Photoelectrochemistry at polycrystalline p-type tungsten selenide **films**. Abruna, Hector D.; Bard, Allen J. (Dep. Chem., Univ. Texas, Austin, TX, 78712, USA). Journal of the Electrochemical Society, 129(3), 673-6 (English) **1982**. CODEN: JESOAN. ISSN: 0013-4651.

AB The title **electrodes** were used in the study of photoelectrochem. redox behavior of several common couples. The highest output was obtained with FeL3+ where L is macrocyclic ligand prepd. by condensation of diacetylpyridine and triethylenetetramine. The p-WSe2 **electrode** was characterized by the flatband potential, the doping d., the **film** resistivity and the scanning electron microscope. The use of some of these systems in solar **energy conversion** was considered.

IT **12067-46-8**
(**films** of polycryst. p-type, photoelectrochem. of)

RN 12067-46-8 HCA
CN Tungsten selenide (WSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═W═Se

CC 72-2 (Electrochemistry)

Section cross-reference(s): 52, 76
ST tungsten selenide polycrystn semiconductor **electrode**; photoelectrochem redox tungsten selenide; solar **energy conversion** tungsten selenide
IT Photoelectric emission
(from tungsten selenide **films**, polycryst. p-type)
IT **Electrodes**
(photoelectrochem., **film**, tungsten selenide, polycryst. p-type)
IT **12067-46-8**
(**films** of polycryst. p-type, photoelectrochem. of)

L56 ANSWER 13 OF 18 HCA COPYRIGHT 2003 ACS on STN
96:71834 **Electrochemical** solar **cells** with **layer**-type semiconductor **anodes**: chemical treatments of the crystal surface. Razzini, G.; Bicelli, L. Peraldo; Pini, G.; Scrosati, B. (Ist. Elettrochim. Chim.-Fis. Metall., Politech. Milan, Milan, Italy). Journal of the Electrochemical Society, 128(10), 2134-7 (English) **1981**. CODEN: JESOAN. ISSN: 0013-4651.
AB Photoelectrochem. cells based on **layer**-type semiconductors (i.e., transition-metal sulfides and selenides) have gained substantial interest due to their reasonably high solar efficiency and good stability against photocorrosion. However, the performance of this cell type may be limited by irregularities in the semiconductor, since edges of the van der Waals surface exposed to the electrolyte may act as recombination centers. To control this effect, chem. surface treatments, based on specific agents which perform selectively on the transition metal atoms at the edge sites, were studied. In particular, the effect of the disodium salt of EDTA (as well as that of many other org. mols.) on the performance of an n-MoSe2/I-, I2/Pt sample cell was investigated. Treatment with EDTA generally improved both short-circuit current and power output, even if a considerable variation in the response from crystal to crystal was obsd. The stability of the EDTA effect under prolonged cell operation was also examd.
IT **12058-18-3**
(**electrodes**, photoelectrochem. cells contg. chem. surface-treated, performance of)
RN 12058-18-3 HCA
CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Mo═Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT **12058-18-3**
(**electrodes**, photoelectrochem. cells contg. chem. surface-treated, performance of)
IT 100-43-6 100-69-6 110-86-1, uses and miscellaneous 139-13-9 139-33-3 462-08-8 482-54-2 504-29-0 1122-58-3 1824-81-3 25014-15-7 25232-41-1

(photoelectrochem.-cell **electrodes** from molybdenum diselenide surface treated with, performance of)

L56 ANSWER 14 OF 18 HCA COPYRIGHT 2003 ACS on STN
95:190018 **Electrochemical** solar **cells** with **layer**-type semiconductor **anodes**. Performance of n-molybdenum selenide (MoSe2) cells. Razzini, G.; Lazzari, M.; Bicelli, L. Peraldo; Levy, F.; De Angelis, L.; Galluzzi, F.; Scafe, E.; Fornarini, L.; Scrosati, B. (Cent. Studio Processi Elettrodici, Polytech. Milan, Milan, Italy). Journal of Power Sources, 6(4), 371-82 (English) **1981**. CODEN: JPSODZ. ISSN: 0378-7753.

AB The output characteristics and the long-term performances of n-MoSe2 (I-,I2) **electrochem**. solar **cells** were investigated. The surface state of the semiconductor plays a key role in the behavior of the cell. With smooth crystal samples, fill factor and efficiency values of 0.6 and 6%, resp., were obtained under air-mass-1 illumination. Such performances are, however, drastically reduced if irregular crystal samples are used. Control of these undesirable surface-state effects was attempted by chem. treatments specific to the unsatd. transition-metal atoms exposed to the electrolyte at the edge sites. The stability of n-MoSe2 (I-,I2) cells under long-time operation, was also evaluated.

IT **12058-18-3**
(**anodes**, photoelectrochem. cells contg., long-term performance of)

RN 12058-18-3 HCA
CN Molybdenum selenide (MoSe2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Se═Mo═Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT **12058-18-3**
(**anodes**, photoelectrochem. cells contg., long-term performance of)

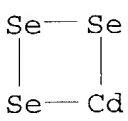
L56 ANSWER 15 OF 18 HCA COPYRIGHT 2003 ACS on STN
95:177608 Thin **film** cadmium selenide **electrodes** for backwall photoelectrochemical cells. Russak, Michael A.; Reichman, Joseph (Res. Dep., Grumman Aerosp. Corp., Bethpage, NY, 11714, USA). Journal of the Electrochemical Society, 128(9), 2029-31 (English) **1981**. CODEN: JESOAN. ISSN: 0013-4651.

AB These CdSe **electrodes** were deposited on SnO2-**coated** glass and have resistivity in the range of 10 .OMEGA./square and visible transmission of .apprx.80%. These **films** were deposited by simultaneous vacuum evapn. of Cd and Se onto chem.-spray-deposited, halogen-doped, SnO2-**coated** glass slides. The irradn. of the CdSe was through the substrate glass and the transparent conductor. This **cell** eliminates the **electrolyte** absorption loss and allows reasonably quick sample change. Current-voltage curves are given and with a Se/Cd ratio of 3 with heat treatment in air at 400.degree. these

backwall **electrodes** gave power conversion efficiencies >4%.

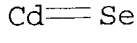
IT **79497-64-6**
(**electrodes**, photoelectrochem.)

RN 79497-64-6 HCA
CN Cadmium selenide (CdSe3) (9CI) (CA INDEX NAME)



IT **1306-24-7**, uses and miscellaneous
(**electrodes**, thin-**film**, for backwall photoelectrochem. cells)

RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)



CC 72-7 (Electrochemistry)
Section cross-reference(s): 74, 76

ST cadmium selenide **electrode** stannic oxide; photoelectrochem **electrode** cadmium selenium; **energy conversion** solar elec

IT **Electrodes**
(photoelectrochem., **film**, cadmium selenide, for backwall cells)

IT **79497-64-6**
(**electrodes**, photoelectrochem.)

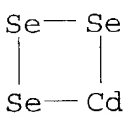
IT **1306-24-7**, uses and miscellaneous
(**electrodes**, thin-**film**, for backwall photoelectrochem. cells)

L56 ANSWER 16 OF 18 HCA COPYRIGHT 2003 ACS on STN
95:177607 Properties of cadmium selenide thin **film** **electrodes** for photoelectrochemical cells. Reichman, Joseph; Russak, Michael A. (Res. Dep., Grumman Aerosp. Corp., Bethpage, NY, 11714, USA). Journal of the Electrochemical Society, 128(9), 2025-9 (English) **1981**. CODEN: JESOAN. ISSN: 0013-4651.

AB Recent efforts on establishing the relations among thin-**film** processing parameters, electronic properties, and photoelectrochem. performance of CdSe **films** are summarized. The **electrodes** were deposited onto Ti sheet and were designed for use in frontwall illuminated **electrochem.** photovoltaic **cells** where the incoming radiation would pass through a transparent window, a thin **layer** of electrolyte, and then strike the semiconductor electrolyte junction. The most promising results were obtained with CdSe **films** deposited at

.apprx.100.degree. with a Se/Cd ratio of 3 and then heat-treated in the temp. range of 350-400.degree. in air.

IT **79497-64-6**
(**electrodes**, photoelectrochem.)
RN 79497-64-6 HCA
CN Cadmium selenide (CdSe3) (9CI) (CA INDEX NAME)



IT **1306-24-7**, uses and miscellaneous
(**electrodes**, thin-**film**, for photoelectrochem. cells)
RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

CC 72-7 (Electrochemistry)
Section cross-reference(s): 74, 76
ST cadmium selenide **film electrode**
photoelectrochem; charge transfer cadmium selenide **electrode**
IT Electron exchange
(on cadmium selenide thin-**film electrodes**, in photoelectrochem. cells)
IT **Electrodes**
(photoelectrochem., **film**, cadmium selenide)
IT **79497-64-6**
(**electrodes**, photoelectrochem.)
IT **1306-24-7**, uses and miscellaneous
(**electrodes**, thin-**film**, for photoelectrochem. cells)

L56 ANSWER 17 OF 18 HCA COPYRIGHT 2003 ACS on STN
95:153806 **Electrochemical** photovoltaic **cells** cadmium selenide thin **film electrodes**. Russak, M. A.; Reichman, J.; DeCarlo, J.; Creter, C. (Res. Dep., Grumman Aerosp. Corp., Bethpage, NY, USA). Report, SERI-TR-8002-8-T1, 63 pp. Avail. NTIS From: Energy Res. Abstr. 1981, 6(11), Abstr. No. 15465 (English) **1980**.
AB Progress on developing stable, thin-**film** CdSe **electrodes** with sunlight conversion efficiency of 10% for use with aq. polysulfide electrolytes in frontwall and backwall illuminated **electrochem**. photovoltaic **cells** is reported. The relation among thin-**film** processing, resultant electronic properties, and current-voltage (I-V) performance was studied to produce **electrodes** with max. power conversion efficiency. The best results were obtained with

CdSe thin-**film electrodes** produced in 2 ways for frontwall cells. **Films** were deposited on Ti at .apprx.100.degree. with a high Se/Cd ratio and then heat treated in air at 350-400.degree.. These **films** usually have a very fine grained microstructure after heat treatment and the resultant **electrodes** exhibit fairly square I-V characteristics, with fill factors of .gtoreq.0.6 and high current output. The overall power efficiency of these **electrodes** is limited by relatively low output voltages. At present, power conversion efficiencies of 3-5% can be obtained reproducibly at simulated air-mass-2 conditions with **electrodes** processed in this manner. The 2nd type of **film** that yielded promising results was deposited on Ti at substrate temp. of >400.degree.. These **electrodes** have increased open-circuit voltage. However, the current output and fill factor are lower. As a result, the power conversion efficiency of these **electrodes** is 3 to 4%. Backwall **electrodes** with an efficiency of >4% and short-circuit densities near theor. for air-mass-2 conditions were produced.

IT **1306-24-7**, uses and miscellaneous
(**electrodes**, photoelectrochem. cells contg. aq. polysulfide electrolyte and, development and properties of)

RN 1306-24-7 HCA

CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST cadmium selenide **electrode** photoelectrochem cell

IT **Electrodes**
(photoelectrochem., cadmium selenide, development and properties of)

IT **1306-24-7**, uses and miscellaneous
(**electrodes**, photoelectrochem. cells contg. aq. polysulfide electrolyte and, development and properties of)

L56 ANSWER 18 OF 18 HCA COPYRIGHT 2003 ACS on STN

92:96735 **Electrochemical** photovoltaic **cells** utilizing thin **film** semiconductor **electrodes**. Russak, M. A.; Reichman, J.; Witzke, H.; Deb, S. K.; Chen, S. N. (Res. Dep., Grumman Aerosp. Corp., Bethpage, NY, 11714, USA). Comm. Eur. Communities, [Rep.] EUR, EUR 6376, Photovoltaic Sol. Energy Conf., 690-700 (English) **1979**. CODEN: CECED9.

AB The fabrication and evaluation of thin-**film** CdSe **electrodes** for use in the title cells is described. The effect of **electrode** prepn. and electrolyte concn. on efficiency and stability are presented. Current-voltage curves and action spectra are also discussed, and a relation between efficiency and minority carrier diffusion length is shown. Conversion efficiencies as high as 5% are reported.

IT **1306-24-7P**, uses and miscellaneous

(**electrodes**, photoelectrochem.-cell, prepn. and properties of thin-**film**)
RN 1306-24-7 HCA
CN Cadmium selenide (CdSe) (9CI) (CA INDEX NAME)

Cd=Se

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST photoelectrochem solar cell **electrode**; selenide cadmium **electrode** photoelectrochem cell
IT **Electrodes**
(photoelectrochem.-cell, cadmium selenide, prepn. and properties of thin-**film**)
IT Electric current carriers
(minority, diffusion length of, efficiency of cadmium selenide photoelectrochem. cell **electrodes** in relation to)
IT **1306-24-7P**, uses and miscellaneous
(**electrodes**, photoelectrochem.-cell, prepn. and properties of thin-**film**)

=> d l57 1-8 cbib abs hitstr hitind

L57 ANSWER 1 OF 8 HCA COPYRIGHT 2003 ACS on STN
127:284789 Thermal spray deposited **electrode** component and method of manufacture. Muffoletto, Barry C.; Paulot, William M.; Spaulding, Joseph E. (Wilson Greatbatch Ltd., USA). PCT Int. Appl. WO 9736023 A1 **19971002**, 42 pp. DESIGNATED STATES: W: AU, JP; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1996-US17558 19961030. PRIORITY: US 1996-621257 19960325.
AB An **electrode** component for an **electrochem.** **cell** is described wherein the **electrode** is produced by thermal spraying an **electrode** active material onto a substrate to coat the substrate. Suitable thermal spraying processes include chem. combustion spraying and elec. heating spraying, using both wire and power processes.
IT **12039-13-3**, Titanium disulfide
(**cathode** active material; **electrochem.** **cell** with **cathode** coated with)
RN 12039-13-3 HCA
CN Titanium sulfide (TiS2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

S=Ti=S

IC ICM C25B009-00
ICS C25B011-04; C25B011-10; C23C004-10; H01M006-04; H01M006-14; H01M006-00; B23P019-00
CC 72-2 (Electrochemistry)
ST thermal spray deposited **electrode** component;

electrolytic cell electrode

IT Alkali metals, uses
(**electrochem. cell** with **anode** from)

IT **Electrolytic cells**
(**electrode** for)

IT **Electrodes**
(thermal spray deposited **electrode** component and method of manuf.)

IT **Coating process**
(thermal spraying; thermal spray deposited **electrode** component and method of manuf.)

IT 1313-13-9, Manganese dioxide, uses 1313-99-1, Nickel oxide, uses 1344-70-3, Copper oxide 7440-44-0, Carbon, uses 7440-44-0D, Carbon, fluorinated, uses 11104-61-3, Cobalt oxide 11115-78-9, Copper sulfide 11118-57-3, Chromium oxide 11126-12-8, Iron sulfide **12039-13-3**, Titanium disulfide 181183-66-4, Copper silver vanadium oxide
(**cathode** active material; **electrochem. cell** with **cathode** coated with)

IT 7439-93-2, Lithium, uses
(**electrochem. cell** with **anode** from)

IT 16919-18-9D, Hexafluorophosphate, alkali metal salt 16973-45-8D, Hexafluoroarsenate, alkali metal salt
(**electrochem. cell** with **electrolyte** from)

IT 67-68-5, Dimethyl sulfoxide, uses 68-12-2, Dimethyl formamide, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl acetate 96-49-1, Ethylene carbonate 109-99-9, Tetrahydrofuran, uses 111-96-6, Diglyme 112-49-2, Triglyme 127-19-5, Dimethyl acetamide
(**electrochem. cell** with **electrolyte** in solvent from)

IT 108-32-7, Propylene carbonate 110-71-4
(**electrochem. cell** with **electrolyte** in solvent from mixt. of dimethoxyethane and propylene carbonate)

IT 7429-90-5, Aluminum, uses 7440-32-6, Titanium, uses
(**electrode** substrate; silver vanadium oxide-coated **electrode** substrate for **electrochem. cell**)

IT 11105-02-5, Silver vanadium oxide
(silver vanadium oxide-coated **electrode** for **electrochem. cell**)

L57 ANSWER 2 OF 8 HCA COPYRIGHT 2003 ACS on STN

127:114512 Durable **electrode** coatings. Tsou, Yu-min (Dow Chemical Co., USA). U.S. US 5645930 A **19970708**, 15 pp. (English). CODEN: USXXAM. APPLICATION: US 1995-513581 19950811.

AB Durable **electrolytic cell electrodes** having low hydrogen overpotential and performance stability are presented. A highly porous electrocatalytic primary phase and an outer, secondary phase reinforcement coating are provided on an elec. conducting transition metal substrate to make the

electrodes. Durability is achieved by the application of the outer secondary phase to protect the primary phase electrocatalytically active coating. A process is also disclosed for catalyzing a substrate surface to promote electroless deposition of a metal.

IT **11113-75-0**, Nickel sulfide
(plating of nickel sulfide on polycarbonate in manufg. durable **electrode**)

RN 11113-75-0 HCA
CN Nickel sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	x	7704-34-9
Ni	x	7440-02-0

IC ICM B32B005-16
ICS C25B011-04
NCL 428328000
CC 72-2 (Electrochemistry)
ST **electrolytic cell electrodes** low hydrogen overpotential
IT **Coating materials**
(durable **electrode** coatings)
IT Brines
(durable **electrode** coatings for electrolysis of)
IT Overvoltage
(durable **electrode** coatings with low hydrogen overpotential and performance stability)
IT **Electrodes**
(**electrolytic cell electrodes** having low hydrogen overpotential and performance stability)
IT Polycarbonates, uses
(substrate; plating of nickel phosphide on polycarbonate in manufg. durable **electrode**)
IT 7440-50-8, Copper, uses
(durable **electrode** coatings prepd. by dipping copper wire screen in coating solns.)
IT 7439-89-6, Iron, uses
(durable **electrode** coatings prepd. by dipping iron wire screen in coating solns.)
IT 11129-89-8, Platinum oxide
(durable **electrode** coatings prepd. by dipping metal wire screen in soln. contg.)
IT 7647-01-0, Hydrochloric acid, uses 7647-10-1, Palladium dichloride
7718-54-9, Nickel dichloride, uses 9060-90-6, Poly(aminostyrene)
10049-08-8, Ruthenium trichloride 10139-58-9, Rhodium nitrate
11113-77-2, Palladium oxide 12036-10-1, Ruthenium dioxide
12645-46-4, Iridium oxide 12648-47-4, Platinum chloride
12680-36-3, Rhodium oxide 25014-15-7, Poly(2-vinylpyridine)
25014-41-9, Poly(acrylonitrile) 25067-59-8, Poly(vinylcarbazole)

25067-61-2, Poly(methacrylonitrile) 25232-41-1, Poly(4-vinylpyridine) 30551-89-4, Poly(allylamine) 55917-50-5, Palladium phosphate 61970-39-6, Osmium oxide
(durable **electrode** coatings prepd. by dipping nickel wire screen in soln. contg.)

IT 7440-22-4, Silver, uses
(durable **electrode** coatings prepd. by dipping silver wire screen in coating solns.)

IT 12597-68-1, Stainless steel, uses
(durable **electrode** coatings prepd. by dipping stainless steel wire screen in coating solns.)

IT 1333-74-0, Hydrogen, properties
(durable **electrode** coatings with low hydrogen overpotential and performance stability)

IT 7440-02-0, Nickel, uses
(**electrode**; durable **electrode** coatings prepd. by dipping nickel wire screen in coating solns.)

IT 12619-68-0, Cobalt boride
(plating of Co boride on polycarbonate in manufg. durable **electrode**)

IT 7440-48-4, Cobalt, properties
(plating of Co on polycarbonate in manufg. durable **electrode**)

IT 12643-12-8, Cobalt phosphide
(plating of Co/P alloy on polycarbonate in manufg. durable **electrode**)

IT 12619-90-8, Nickel boride
(plating of nickel boride on polycarbonate in manufg. durable **electrode**)

IT 11104-08-8, Nickel phosphide
(plating of nickel phosphide on polycarbonate in manufg. durable **electrode**)

IT **11113-75-0**, Nickel sulfide
(plating of nickel sulfide on polycarbonate in manufg. durable **electrode**)

L57 ANSWER 3 OF 8 HCA COPYRIGHT 2003 ACS on STN

106:199242 **Cathodes**. Kanebori, Keiichi; Kirino, Fumiyoshi; Hiratani, Masahiko; Ito, Yukio; Miyauchi, Katsumi; Kudo, Tetsuichi (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61256563 A2 **19861114** Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-97761 19850510.

AB Conductive and heat-resistant macromol. coatings are formed between the substrate and metal chalcogenide active material in **battery cathodes**. Polyimide resin soln. contg. dispersions of Ni, Ti, W, and graphite was spin-coated on a stainless steel substrate and heated at 200 and 350.degree. to give an .apprx.10-.mu. coating. Thin TiS2 film was formed on the coating by plasma chem. vapor deposition from TiCl4 and H2S. The resistance between the substrate and TiS2 was .ltoreq.100.OMEGA. vs. .gtoreq.10 M.OMEGA. for **cathode** without the polyimide interlayer.

IT **12039-13-3**, Titanium disulfide

(**cathodes** with stainless steel grids coated with metal-contg. polyimides, for **batteries**)

RN 12039-13-3 HCA
CN Titanium sulfide (TiS2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

S=Ti=S

IC ICM H01M004-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 35, 38
ST **cathode battery** polyimide metal coating; sulfide titanium **cathode** polyimide; nickel polyimide coating **battery cathode**; titanium polyimide coating **battery cathode**; tungsten polyimide coating **battery cathode**; graphite polyimide coating **battery cathode**; elec resistance polyimide coating **cathode**
IT **Coating materials**
(polyimides, contg. metals, for stainless steel grids, for titanium sulfide **battery cathodes**)
IT **Cathodes**
(**battery**, titanium sulfide, with stainless steel grids coated with metal-contg. polyimides)
IT **12039-13-3**, Titanium disulfide
(**cathodes** with stainless steel grids coated with metal-contg. polyimides, for **batteries**)
IT 12597-68-1
(coating materials, polyimides, contg. metals, for stainless steel grids, for titanium sulfide **battery cathodes**)
IT 7440-02-0, Nickel, uses and miscellaneous 7440-32-6, Titanium, uses and miscellaneous 7440-33-7, Tungsten, uses and miscellaneous 7782-42-5, Graphite, uses and miscellaneous
(in polyimide films, on stainless steel grids, for titanium sulfide **battery cathodes**)

L57 ANSWER 4 OF 8 HCA COPYRIGHT 2003 ACS on STN
91:184061 **Cathode** for brine electrolysis. Kajiyama, Yoshihisa; Murakami, Yoshio; Matsuura, Shunji (Tokuyama Soda Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 54087680 **19790712** Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1977-155628 19771226.
AB In prepg. a **cathode** for an **electrolysis cell** by sinter coating an Fe base material with a **cathode**-active material, the Fe base material is pretreated in a soln. contg. .gtoreq.1 phosphates selected from Mn phosphates, Zn phosphates, or Fe phosphates. The **cathode** has a lower H overvoltage compared to a conventionally prepd. **electrode** without this pretreatment. Thus, a 10 x 30 mm steel sheet (5541) was polished with emery paper, rinsed, dipped in 10% HCl, dipped for 10 min in a 60.degree. bath contg. H3PO4 60, Zn3(PO4)2.4H2O 10,

NaH2PO4.2H2O 10 g, and H2O 3%, coated with a suspension contg. Na(SCN)2 40, Me cellulose 1.5, poly(ethylene glycol) 1.5, and H2O 30 parts, then heated for 1 h at 900.degree. in an inert atm., the final coating and heating operation being repeated 4 times.

IT **12030-51-2 16812-54-7**
(in coating, sinter, of phosphate treated steel **cathodes**)

RN 12030-51-2 HCA
CN Iridium sulfide (IrS2) (7CI, 9CI) (CA INDEX NAME)

S=Ir=S

RN 16812-54-7 HCA
CN Nickel sulfide (NiS) (8CI, 9CI) (CA INDEX NAME)

Ni=S

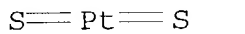
IC C25B011-04
CC 72-10 (Electrochemistry)
ST **cathode** steel phosphating sinter coating; nickel sinter coating steel **cathode**
IT Brines
(electrolysis of, **cathodes** for)
IT **Cathodes**
(steel, phosphating and sinter coating of)
IT **Coating process**
(sintering, of phosphated steel **cathodes**)
IT 12597-69-2, uses and miscellaneous
(**cathodes**, phosphating and sinter coating of)
IT 6010-09-9 10026-00-3 **12030-51-2** 13465-52-6 13689-92-4 **16812-54-7** 57229-17-1
(in coating, sinter, of phosphate treated steel **cathodes**)

L57 ANSWER 5 OF 8 HCA COPYRIGHT 2003 ACS on STN
80:33330 **Electrode**. Chisholm, Raymond S. (Nora International Co.). U.S. US 3770613 **19731106**, 6 pp. Division of U.S. 3,649,485 (CA 76;135112c). (English). CODEN: USXXAM. APPLICATION: US 1971-104454 19710106.
AB The **electrodes** have a coating applied to an electroconductive base. The coating consists of the sulfides, nitrides, borides and carbides of Al, Ta, Ti, Bi, W, Zr, and Hf mixed with the metals, oxides, sulfides, nitrides, borides and carbides of Au, Ag, Pt, Pd, Ru, Rh, Ir, Os, Ni, Cr, Pb, Cu and Mn. The use of the novel **electrodes** in alkali metal-Cl cells, both diaphragm and Hg type, alkali metal chlorate cells and other similar electrolytic applications is discussed. A coating compn. is prepd. by mixing toluene soln. of Pt resinate (7.5 wt. % Pt) 3.75, Ti sulfide 1, and toluene 4 g. The Ti sulfide is thoroughly mixed in the toluene-resinate mixt., and the resulting mixt. is painted on

a Ti strip which is, prior to painting, pickled in HCl soln. The painted surface is heated in air to 450.degree. for 1 hr. The procedure is repeated 5 times to provide a tightly bonded coating of Ti sulfide-Pt to the Ti base.

IT **12038-21-0 12673-92-6**
(coating with, of graphite and titanium **electrodes**, for brine electrolysis)

RN 12038-21-0 HCA
CN Platinum sulfide (PtS2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 12673-92-6 HCA
CN Titanium sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	x	7704-34-9
Ti	x	7440-32-6

IC B01K
NCL 204290000R
CC 77-10 (Electrochemistry)
ST **electrode electrolytic cell** chlorine chlorate; alkali metal chlorate cell **electrode**; coating titanium base **electrode**

IT Brines
(electrolysis of, coating of graphite and titanium **electrodes** for)

IT **Electrodes**
(for brine electrolysis, coating of graphite and titanium)

IT Chlorates
(manuf. of, coating of graphite and titanium **electrodes** for)

IT **Coating process**
(of graphite and titanium **electrodes**, for brine electrolysis)

IT 11113-84-1 **12038-21-0** 12070-08-5 12673-91-5 **12673-92-6**
(coating with, of graphite and titanium **electrodes**, for brine electrolysis)

IT 7440-32-6, uses and miscellaneous 7782-42-5, uses and miscellaneous
(**electrodes**, coating of, for brine electrolysis)

L57 ANSWER 6 OF 8 HCA COPYRIGHT 2003 ACS on STN
78:143211 Flexible **battery cathode**. Hovspian, Boghos Karnig (du Pont de Nemours, E. I., and Co.). Ger. Offen. DE 2243207 **19730308**, 20 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1972-2243207 19720901.

AB Flexible **cathodes** for **primary cells** were made by coating slurried sulfides of Fe, Pb, Cd, Cu, or Ni, or oxides of Cu or Fe on 127-203 .mu. thick Pb or Al foils and cold-pressing at 1410-2810 kg/cm2. Thus, FeS prepd. by sintering 1:1 Fe-S mixts. at 450.degree. was sieved, slurried in Cl2FCCF2Cl, spread on a 127 .mu. thick Al foil, and pressed 2 min at 2810 kg/cm2 to give a well adhering coating. A cell made from the coated **cathode** sheet discharged within 5 min at 125 mA and 1.0 V.

IT **1317-37-9**
(coating with, on aluminum or lead foil **cathodes**)

RN 1317-37-9 HCA
CN Iron sulfide (FeS) (8CI, 9CI) (CA INDEX NAME)

Fe=S

IT **1317-40-4**
(coating with, on lead foil **cathodes**)

RN 1317-40-4 HCA
CN Copper sulfide (CuS) (8CI, 9CI) (CA INDEX NAME)

Cu=S

IT **16812-54-7**
(coating with, on lead foil **cathodes**)

RN 16812-54-7 HCA
CN Nickel sulfide (NiS) (8CI, 9CI) (CA INDEX NAME)

Ni=S

IC H01M
CC 77-2 (Electrochemistry)
ST lead **cathode battery**; aluminum **cathode** ; iron sulfide coating **cathode**; cadmium sulfide coating **cathode**; copper sulfide coating **cathode**; nickel sulfide coating **cathode**; oxide copper coating **cathode**

IT **Cathodes**
(**battery**, aluminum or lead, oxide- or sulfide-coated foils)

IT **Coating process**
(of aluminum or lead foil **cathodes**, with oxides or sulfides)

IT 7429-90-5, uses and miscellaneous 7439-92-1, uses and miscellaneous
(**cathodes**, coating of, with sulfides)

IT **1317-37-9**
(coating with, on aluminum or lead foil **cathodes**)

IT 1306-23-6, uses and miscellaneous 1309-37-1, uses and miscellaneous 1314-87-0 1317-38-0, uses and miscellaneous

1317-39-1, uses and miscellaneous **1317-40-4**
(coating with, on lead foil **cathodes**)
IT **16812-54-7**
(coating with, on lead foil **cathodes**)

L57 ANSWER 7 OF 8 HCA COPYRIGHT 2003 ACS on STN
78:105397 Coating of metal halides and oxides with metal sulfides for **cathodes**. Braun, Leon (Molecular Energy Corp.). Ger. Offen. DE 2135583 **19730201**, 8 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1971-2135583 19710716.
AB Cu, Ni, Ag, and Pb halide or oxide particles were coated with Cu, Ni, Ag, and Pb sulfides, resp., by pptn. from a soln. or by spraying. The coated particles were used for **battery cathodes** low in content of material producing no energy. Thus, 50 g Na2S in 1500 ml EtOH was added to a suspension of 500 g Cu fluoride particles (50-100 mesh) in 1000 ml MeOH to give a Cu sulfide coating. The coated particles were mixed with 3% poly(vinyl chloride) and compacted at .apprx.149.degree. to give a self-supporting elec. conducting **cathode** of high c.d.
IT **11113-75-0**
(coating with, on nickel fluoride, for **cathodes**)
RN 11113-75-0 HCA
CN Nickel sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	x	7704-34-9
Ni	x	7440-02-0

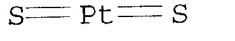
IT **12751-47-2**
(coating with, on silver chloride, for **cathodes**)
RN 12751-47-2 HCA
CN Silver sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	x	7704-34-9
Ag	x	7440-22-4

IC H01M
CC 77-2 (Electrochemistry)
Section cross-reference(s): 71
ST coating metal halide sulfide; copper fluoride sulfide coating; nickel fluoride sulfide coating; silver chloride sulfide coating; lead oxide sulfide coating; **cathode battery** metal sulfide
IT **Cathodes**
(**battery**, metal halides and oxides, coated with sulfides)
IT **Coating process**

(of metal halides and oxides, with sulfides, for **battery cathodes**)
IT 11113-59-0
(coating of, with copper sulfide, for **cathodes**)
IT 1309-60-0
(coating of, with lead sulfide, for **cathodes**)
IT 10028-18-9
(coating of, with nickel sulfide, for **cathodes**)
IT 7783-90-6
(coating of, with silver sulfide, for **cathodes**)
IT 11115-78-9
(coating with, on copper fluoride, for **cathodes**)
IT 1314-87-0
(coating with, on lead dioxide, for **cathodes**)
IT **11113-75-0**
(coating with, on nickel fluoride, for **cathodes**)
IT **12751-47-2**
(coating with, on silver chloride, for **cathodes**)

L57 ANSWER 8 OF 8 HCA COPYRIGHT 2003 ACS on STN
76:135112 Electrolysis of brine using coated carbon **anodes**.
Chisholm, Raymond S. (PPG Industries, Inc.). U.S. US 3649485 **19720314**, 4 pp. (English). CODEN: USXXAM. APPLICATION: US 1968-764618 19681002.
AB Coatings of sulfides, nitrides, borides and carbides of Al, Ta, Ti, Bi, W, Zr, and Hf mixed with the metals, oxides, sulfides, nitrides, borides, and carbides of Au, Ag, Pt, Pd, Ru, Rh, Ir, Os, Ni, Cr, Pb, Cu, and Mn are described. For example, a soln. of 3.75 g Pt resinate (7.5 wt. Pt), 1 g Ti sulfide and 4 g toluene was painted onto a Ti strip which was pickled in HCl soln. prior to painting. The painted surface was heated in air to 450.degree. for 1 hr. This process was repeated 5 times to yield a tightly bonded coating of Ti sulfide-Pt on the Ti base. C **electrodes** coated in this manner are used in cells for prodn. of alkali metal-Cl (both diaphragm and Hg-type) and alkali metal-Na chlorate by electrolysis of alkali metal chlorides.
IT **12038-21-0 12673-92-6**
(coating with, of carbon and titanium **anodes**, for brine electrolysis)
RN 12038-21-0 HCA
CN Platinum sulfide (PtS2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 12673-92-6 HCA
CN Titanium sulfide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	x	7704-34-9

Ti	x	7440-32-6

IC C01B; B01K
NCL 204095000
CC 77 (Electrochemistry)
Section cross-reference(s): 49
ST electrolysis brine coated carbon **anode**; **electrode** coating electrolysis brine; chlorine prodn elctrolytic cell; alkali metal prodn **electrolytic cell**; chlorate prodn **electrolytic cell**
IT Brines
(electrolysis of, coated carbon **anodes** for)
IT **Anodes**
(for brine electrolysis, coated carbon)
IT **Coating process**
(of carbon and titanium **anodes**, for brine electrolysis)
IT 7440-32-6, uses and miscellaneous 7440-44-0, uses and miscellaneous
(**anodes**, coated, for brine electrolysis)
IT 7440-06-4, uses and miscellaneous
(coating with, of carbon and titanium **anodes**, for brine electrolysis)
IT 11113-84-1 **12038-21-0** 12070-08-5 12673-91-5 **12673-92-6**
(coating with, of carbon and titanium **anodes**, for brine electrolysis)